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Editorial Notes

The Coal Bill

ONE of the principal tasks of the House of Commons last week was the Report Stage of the Coal Bill; there is, of course, hardly any aspect of this Bill which is not of interest to public utility undertakers. We can refer only to the main issues.

Many undertakers in coal mining districts were seriously alarmed when they discovered that the coal under their works —and by which their works were supported—would vest in the Coal Commission, and that the Commission would have the right to work it and so to let down the surface of the ground upon which the works had been built. As the Bill was originally introduced the only remedy of the public utility undertaker in such a case would be to raise an objection before the Court of Railway and Canal Commission. This unsatisfactory state of affairs is remedied by a new Clause.

Under the new Clause, any coal which vests at the date of the commencement of the Act in a statutory public utility undertaker may not be worked without the previous consent of such undertaker. This consent is not to be unreasonably withheld, but in giving it the undertakers may attach thereto certain conditions—such as the condition that the working shall not let down the surface, or that compensation shall be paid for damage done. If it is contended that the consent of the public utility undertaker is unreasonably withheld, the matter may be referred to the Court of Railway and Canal Commission, which in giving their decision "shall have regard primarily to the safety and efficient working of the undertaking in question."

An interesting point was raised by Sir Reginald Clarry who contended that, whereas the coal under the land of a public utility undertaking had been acquired on the basis that it should not be worked—in other words, that it was of practically no value—the Commission could, if they succeeded in their application to the Court of Railway and Canal Commission, work it without paying a fair price for it. The amendment is extremely complicated, and the Industry will be grateful to Sir Reginald Clarry for raising this important point. By his persistence he obtained from the Attorney General an assurance that in those rare cases where such coal was worked a fair price would be paid. The Attorney General pointed out that in practice coal would only be worked where it had ceased to be required as a support.

Coal Prices

THE answer which Sir Reginald Clarry obtained from the Secretary for Mines on the second day of the Report Stage is most gratifying. Previously it had been universally thought by industrial consumers of coal that assurances given by the Central Council of Colliery Owners would have no legal binding force, and certainly they could not have been regarded as binding upon Committees of Investigation. Such Committees would be bound by the Coal Mines Act, and it would have been quite impossible for them to give any assurances which had no statutory authority, and might be inconsistent with existing statutory requirements. On Committee Stage, however, the Government refused to incorporate the assurances in the Act and so give them valid binding force. The Minister has now announced that this defect is to be remedied, and that all the District Executive Coal Boards have given an undertaking that they will amend the District Schemes so that these shall contain Assurances Nos. 1, 3, and 4. These Assurances are as follows: That the consumer shall have the right to change the sources of supply; that complaints in respect of price may be referred to a Committee of Investigation; and that coal shall be reserved pending the hearing of the complaint. We allude to these important assurances only briefly as they were dealt with fully in the last issue of the "JOURNAL."

The Industry will join us in our congratulations to Sir Reginald Clarry and those who have worked so hard to preserve the consumer's interest in the debates on coal. It is excellent to have succeeded so far against so many and heavy odds. It has been suggested in some quarters that the opposition to the monopolistic powers which the Government has conferred on the coal owners came solely from "wealthy public utilities" which had previously purchased their coal "far below the cost of production." Such a fallacy is utterly exploded by the trenchant and weighty attack on the coal policy of the Government made by no less an authority than Sir P. Malcolm Stewart in his Address as Chairman of Associated Portland Cement Manufacturers, Ltd. In contending that there is no justification for the present high prices of coal, Sir Malcolm said: "Who could not make money while the going is good, fortified by the strong supporting arm of the Government? This should not be used to hold up par-

ticular interests against the general interests of all citizens of the State."

While it is true that we can congratulate ourselves upon some measure of success, it is regrettable that at the end of the Report Stage the Government, in spite of an excellent appeal by Mr. Ross Taylor, succeeded in deleting that provision of the Bill which would have enabled the independent legal Chairman of a Committee of Investigation to give a decision in all cases where the other members of the Committee were not unanimous. This over-riding power the Chairman is now to lose, and his sole function will be to give a casting vote where the other members are equally divided. The Government argued that the over-riding power of the Chairman is unnecessary now that a consumer can appeal from a Committee of Investigation to the Central Appeal Tribunal. In our view this argument is unsound in so far as it is based on the assumption that the other members of a Committee of Investigation will frequently be equally divided in their opinion. While the coal representatives can be relied upon to support high prices, the consumers' representatives may not always agree that a low price should be granted to any particular trade interest. If one consumer's representative was in favour of a reduction in the price quoted to a gas undertaking, the other consumers' representative—who might possibly speak for the domestic consumer of coal—would probably feel that such a reduction might involve an increase in the price of domestic coal. In that particular case he would no doubt vote with the coal representatives, and the Chairman's casting vote would be of no avail.

Surely the wiser plan would be to place the matter beyond the reach of sectional interests by entrusting the decision to an impartial lawyer. We hope that some further attempt will be made in this direction at a later stage of the Bill's progress.

Coal Utilization Research

A FEW weeks ago we called attention in these columns to the plan of the Combustion Appliance Makers' Association (Solid Fuel) to convert its small research department into a separate organization for research into the utilization of coal. Official announcement was made last week at the fifth annual luncheon of the Association of the formation of the British Coal Utilization Research Association with an assured income for five years of between £25,000 and £30,000 a year, supported by the coal trade and by a grant from the Government. The Gas Industry will no doubt take due note of this; it is an event which will undoubtedly bear weight in any consideration as to whether its "official" research work is as effective as it could be made, whether its present research—and we are not taking into account the research undertaken by individual gas undertakings and by the manufacturers of gas making plant and gas using equipment, on which hundreds of thousands of pounds are expended annually—is on too small a scale to command the attention which the activities of an industry of the magnitude of the Gas Industry should demand.

At the luncheon to which we have referred Sir Frank Smith, Secretary of the Department of Scientific and Industrial Research, mentioned that each year, as a result of burning raw coal in the domestic hearth, 2,500,000 tons of soot are poured into the atmosphere, while the use of raw coal in industrial processes accounts for a further 800,000 tons of soot. The damage to health and property of this country which results from this pollution is enormous, and it is obvious that any practical steps taken to mitigate this evil are to be commended. Already the coal industry's research organization is installing test shops and laboratories where appliances can be systematically tested with different kinds of fuel and, if found satisfactory, given a seal and certificate of approval. With the increased funds now available, research will be greatly extended with a view to making domestic coal burning appliances more efficient and labour saving, and special attention is being paid to more convenient lighting of fires, ash removal, smoke abatement, and continuous burning. These efforts will no doubt help in some measure to lessen the smoke pall, but surely the logical way to tackle the problem is to burn not raw coal, but smokeless fuel either in solid or in gaseous form; and it has been clearly demonstrated by the Gas Industry that the completely smokeless home need not add to the family fuel budget. If only this was properly appreciated the smokeless age, which is bound to come, would quickly eventuate.

The time will come when gas will supplant all solid fuel; of that we have no doubt. But the completely smokeless home using gas and solid smokeless fuel is a matter of immediate practical politics, and we can only regard as a retrograde step any attempt to encourage the public to continue to consume raw coal—whatever the improvements made in coal burning appliances. We feel that the State-aided research of the coal interests may retard but cannot prevent the advent of the smokeless age. It is plain that the Gas Industry must put forward further effort, and it must, too, take note of what the coal interests are doing. They are making a move not only in research on appliances, but in collective propaganda and advertising, and are busy formulating plans for market research, training of engineering and selling staff, and after-sales service. All avenues are being explored which may appear likely to extend the burning of raw coal domestically and industrially. A scheme of hire purchase appliances is already in action, features of which are that the dealer receives the total cash price of a coal burning appliance when the transaction is completed, that the consumer may spread the cost over a period of time which suits him, and that each transaction is personal between the dealer and his customer. An after-sales service is provided, an insurance fund is created to protect the dealer against losses, and there is to be a service fund to assist him in cases where circumstances beyond his control give rise to complaint regarding any equipment sold. A definite showroom policy has been formulated.

The fact remains, however, that the Gas Industry has the advantage of a superior fuel, superior equipment in which to use it, and a fully organized sales service; and it has an effective reply to the plans of those anxious to see an increase in the consumption of raw coal. This answer lies in the offer of gas for additional purposes at prices competitive with the costs of using raw coal, which means, of course, the adoption of a two-part or other attractive tariff. As we have already pointed out in these columns, gas sold on such terms is replacing coal in the mining districts themselves.

Atmospheric Pollution

WE are glad to note from the Annual Report on the Investigation of Atmospheric Pollution, which has just been issued by the Department of Scientific and Industrial Research, the increased interest which is being taken in the measurement of air pollution. Many more instruments have been installed; some of these are in districts representative of country air conditions and should be particularly valuable for

purposes of comparison with more heavily polluted industrial areas. The report contains a warning that, while a definite improvement in the condition of our atmosphere may be beginning, no far-reaching conclusions should be drawn. At the same time, the figures now published do show a tendency in the right direction. When making comparisons the state of industrial activity has to be borne in mind. Of recent years this activity has increased, and with this in view we consider from the results given in the report that there is ground for belief that the smoke abatement movement has had a real effect. Conditions, we suggest, would have been very different had not gas entered so largely into the industrial field. Sheffield, of course, provides a striking instance. Of the total sales of the Sheffield Gas Company, which now amount to nearly 10,000 million cu.ft. a year, over 70% is represented by gas used for industrial purposes.

Care must be exercised in drawing deductions from the figures set out in the report for different towns. So much depends on the position of the measuring instrument. For example, a single instrument may have been deliberately set up at a place where, owing to some local circumstances, pollution is known to be high in order to obtain information about the variation of pollution in that locality, which may be very restricted. As the report points out, uninformed writers in the Press have made play with comparisons between different towns on the basis of observations at individual sites without due regard to the circumstances, and criticisms of the pollution in particular places have been made which a more thorough examination of the facts would fail to justify. Such criticisms are obviously prejudicial to the success of the investigation. However, a general comparison may be made with the figures for average for the five years ended 1932, which is taken as a basis of comparison in the report. Fewer observing stations than last year show a marked reduction in tar deposit; on the other hand, fewer stations show an increase. There is indication of improvement in the deposits of fine particles of fuel escaping up the chimney and of organic dust of various kinds. Ash deposits also show an improvement and there is a reduction in sulphate deposits.

An interesting section of the report deals with the pollution of the atmosphere of one town by the smoke from another. In an area such as the manufacturing districts of the Midlands it is certain that each of the towns contributes some of the atmospheric pollution recorded in the other towns. In other words, it may be difficult to say how much of the deposit received in a town is derived from the town itself and how much from neighbouring sources. Something can be done, however, to distinguish between these two sources of pollution by placing gauges on the outskirts as well as in the centre of the town. The centrally situated gauges will receive deposit from the sources in the town itself to windward and will also receive the deposit from other towns which may be brought in the wind. On the other hand, gauges on the outskirts of the town and up wind will only receive deposit brought in the wind from other places towards the town and none from the town itself. Similarly the gauge on the outskirts and down wind will receive deposit from the whole of the town to windward of it and also what is brought in the wind from other parts. In this regard we look forward to the results of an intensive survey of atmospheric pollution which is being carried out at Leicester. The observations, which began in April of last year, are planned to last for a considerable period. Its successful conclusion, Mr. Bromhill Smith, Chairman of the Standing Conference of Co-operating Bodies, observes, depends on the availability of sufficient means to ensure that adequate staff and other provision can be made, and maintained, to meet all technical requirements; but already good progress has been made. To give an idea of the comprehensive nature of this particular survey, we may mention that observations are being made at twelve stations, selected to cover conditions in the centre of the city, on its outskirts, and in the country a short distance outside. At each of these stations combined apparatus has been set up for recording suspended impurity, sulphur dioxide, and active sulphur gases in the atmosphere, together with an apparatus for recording ultra-violet light. Full meteorological data are needed for correlation with the data of pollution obtained; this need has been met at Leicester by a decision to establish a complete meteorological station.

Development of Industries

With the growing appreciation by the industrialist of the very great advantages of gaseous fuel, gas undertaking executives naturally become more concerned with general industrial trends. Of recent years there has been much said about a drift of industry to the south, the suggestion being made that new factories in the south were the results of transfers from the north. Last autumn we referred to this suggestion in these columns, calling attention to the issue by the Board of Trade of a Survey of Industrial Development in Great Britain during 1936. The conclusion drawn from the statistics set out in that report was that there was no evidence of transfer of industries from north to south, but there was obviously a strong tendency for new industrial operations to concentrate on Greater London. Last week evidence submitted by the Federation of British Industries to the Royal Commission on the Geographical Distribution of the Industrial Population again quoted as misconceptions statements that the growth of London was the result of this drift of industry. The facts of the case, it was submitted, were that on the industrial side there had been a relative decline in employment in the heavy industries and those largely catering for export trade, most of which were principally centred in the north, while the industries which had developed in the south were new industries of the lighter type, especially those engaged in catering for the home market. There was no evidence that more than a very small proportion of the new factories established in the London area represented transfers from the provinces.

The idea, also, that the new industries established in the south had been mainly established in London was equally mistaken. The increase had taken place really in the Home Counties, while so far as London itself was concerned the movement had been one of decentralization.

Proposed Department of Information

On the question of State control of industrial location, the memorandum of evidence suggested the formation of a department of industrial information, under the auspices of the Board of Trade, to provide manufacturers with up-to-date information in regard to such matters as rates, labour supply, power, water, area available for factory building, housing accommodation for workers, transport facilities, and so on, in various localities. The need for such a body, it was explained, had been disclosed by a questionnaire which the Federation had addressed to a section of its members. Many had suggested that if there had been such a body to approach they would not, having heard all the facts, have located their new factories in the areas they had chosen. At the same time the Federation would not agree to such a department having power to veto on the localization of industry. In this question of choice of site for new works requiring fuel for their processes the rates at which gas is available may well prove a deciding factor.

Air Conditioning

Much success has attended the efforts of the American Gas Industry in pressing forward the claims of gas as a "comfort giver" rather than merely a heating agent. Of course, in America, the summer temperatures are much higher than in this

country, which naturally affects the demand for air conditioning, but there is a field for all-the-year-round gas comfort in this country. The immediate prospects are for blocks of flats and offices, for hotels, public buildings, and theatres; and where new buildings of this type are contemplated sight should not be lost of the possibilities of applying gas to air conditioning, for the capital expense of a gas-operated plant would be a very small item in the total for the building it would serve. Prospects are very bright when we turn to the heating of factory premises where special operations are carried out where the maintenance of defined atmospheric conditions is essential to success. Such operations include the spinning and weaving of yarn and cotton, the manufacture of telephone cables, printing processes, drying of photographic papers and films, and the curing of cork.

That the electricians are making a strong bid for the air conditioning load is obvious from the current issue of the *Electrical Review*, which contains several articles on different aspects of the problem. Having artlessly contended that "space heating by electricity offers advantages over all other forms of space heating by virtue of its unique flexibility in regard to both installation and control," our contemporary went on to say that "unless the keenest attention of electrical men is directed to the problem, the heating load necessarily associated with air conditioning is likely to be diverted to steam, when not only would future business be lost to electricity supply, but the existing space-heating load would very likely also pass to steam in many instances." Electricity, of course, has nothing on gas in regard to flexibility and nicety of control; and gas is cheaper. Perhaps that is why our contemporary studiously avoided any reference to competition from gas in the air conditioning field. On the question of cost, it is interesting to turn to one of the articles in the *Electrical Review*. In it the Author, Mr. E. M. Ackery, of the Electrical Development Association, stated: "All supply engineers know that the electric space heating load is a difficult one to obtain. Most consumers are prepared to admit that electric heating is better heating, but in spite of that it is merely heating, and the cost is inevitably compared with that of other methods, with the result that the cases where the use of electricity can be justified are relatively few and far between. When, however, electric heating is replaced by electric air conditioning the consumer receives a service which cannot be compared with that from an ordinary heating system of any description He obtains a service that is entirely new, and as a result he is not likely to object to the cost of the heating portion because it is more than that of other methods." The point is that the Gas Industry can offer this something new at lower cost.

Personal

Mr. E. BIRCH has been appointed Distribution Superintendent to the Stockton-on-Tees Gas Department. He started his career at Stockton in 1915 and has been solely occupied in Distribution since 1923.

* * *

The marriage of Miss M. ROBERTSON, only daughter of Mr. and Mrs. Robert Robertson, of Bristol, to Mr. R. W. Melvin, took place at St. Matthews, Kingsdown, Bristol. Mr. Melvin is an Assistant Engineer with the Bristol Water Works Company.

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Mr. W. A. M. STEWART, Manager of the Linlithgow Gas Company, has been appointed Engineer and Manager of the Maryport U.D.C. Undertaking in succession to Mr. F. G. Bowness, whose appointment as Engineer and Manager at Ripon has already been announced in this column.

* * *

Mr. R. S. FALKNER, Engineer and Manager of the Ilfracombe Gas Company, has been unanimously elected President of the Ilfracombe Chamber of Trade. Members of the Chamber have a lively appreciation of Mr. Falkner's business ability and enthusiasm. His enterprise was illustrated last December when he initiated a scheme for a local Christmas Shopping Festival which he helped to carry through to success with characteristic zest and thoroughness.

* * *

Mr. B. ARNOLD has retired from the position of Secretary and Manager to the Knottingley Gas Company as from March 31 last, after forty years' service, but is retaining his seat on the Board. His retirement was marked by a gift of a case of pipes from the workpeople and staff.

As from April 1, Mr. ALBERT PICKARD, who has been with the Company for fifteen years, has been appointed Acting Secretary and Manager.

* * *

Mr. F. L. NICHOLS, who has for many years represented Messrs. William Sugg & Co., Ltd., in Eastern England, retired on March 31 and has been succeeded by Mr. O. W. B. WILKS, who is already well known in the circles in which he will be working. Mr. Nichols takes with him the good wishes of the Directors and Staff of the Company, and on their behalf was presented on March 31 with a handsome oak clock and set of chessmen with board as a mark of their regard.

* * *

Mr. SYDNEY STANSFIELD, who has been with the firm since its inception, has been appointed to the position of Chief Technical Engineer of Oxley Engineering Company, Ltd. Mr. GEORGE BELL, late of Messrs. Ride & Bell, Ltd., has joined the Staff, and will be in charge of coal, coke, and oxide handling plant. Mr. FRED GARNER, who served his apprenticeship with Messrs. R. & J. Dempster, Ltd., and who was with the Sturtevant Engineering Company, Ltd., for 14 years, has been appointed Sales Manager.

Obituary

Mr. HENRY WILSON, of North Terrace, Seaham Harbour, Durham, who was a Director of Seaham Gas and Lighting Company until its amalgamation with Sunderland Gas Company, has died at his home.

* * *

Mr. HERBERT W. ALRICH, Engineer of the Consolidated Edison Company of New York, died suddenly in New York on March 25. He was a recognized authority on gasholder construction and maintenance. In 1910 he received the Beal Medal of the American Gas Institute, the highest award of the American Gas Industry.

"GAS JOURNAL" Directory

In order that readers may be able to keep the particulars contained in the "JOURNAL" Directory up to date, we summarize in the following list various changes which have occurred during the past month:

Page 6. BARNSTAPLE. F. L. Schofield, M.D. & S., retired.
" 18. CLOUGHFOLD. R. Crowther appointed M. & S., vice J. Riley, retired.
" 22. DURHAM. A. S. Middleton appointed S.
" 42. LOWESTOFT. T. V. Johns appointed M.D. & E.
" 44. MARYPORT. F. G. Bowness, E. & M., resigned.
" 54. RAMSBOTTOM. Amalgamated with Cloughfold. Gas supplied from latter.
" 56. RIPON. F. G. Bowness appointed E., M., & S.
" 60. SEDGLEY. O. S. Brettle appointed E. & M., vice J. Brettle, retired.
" 66. SWADLINCOTE. A. D. Hill appointed E. & M.
" 82. DUMFRIES. S. Johnstone appointed E. & M.
" 90. PENICUIK. J. Richmond, E. & M., retired.
" 94. CARRICKFERGUS. B. Corbett appointed E., M., & S.

News of the Week

An Extension of the public lighting contract in their Combe Martin area for a further period of five years has been obtained by the Ilfracombe Gas Company.

Sir Christopher Clayton, Chairman of the Liverpool Gas Company, presided over a conference of the Industrial Co-partnership Association, held at the Company's headquarters, Radiant House, on March 30.

An Exhibition of modern gas appliances was held during the week ended April 2 by the Herne Bay Gas Company at the County Hall, Herne Bay. A feature of the exhibition was the daily cookery demonstrations.

The Society of British Gas Industries are holding their May Council Meeting at 56, Victoria Street, S.W. 1, in the morning of Wednesday, May 11. It will be followed by the Annual Meeting of the Society in the afternoon and the Annual Dinner in the evening, both at the May Fair Hotel.

The New Sheffield Gasholder will be inaugurated on June 29 by the Duke of Kent, who will subsequently be the guest of the Sheffield Gas Company and the contractors, Messrs. Newton Chambers & Co., Ltd., at luncheon. The gasholder, which is being built at the Company's Wincobank Works, is the largest spirally-guided type in the world, having a capacity of 8 million cu.ft. Its construction is part of the general scheme associated with the development of the coke oven gas grid, and the visit of His Royal Highness recognizes in a fitting manner the national importance of the scheme.

An Increase in the price of gas of 1d. per 1,000 cu.ft. is announced by the Brechin Gas Company.

The Opposition of the Brixham Urban Council to the Brixham Gas and Electricity Bill has been withdrawn. The Bill, the purpose of which is to authorize the Brixham Gas and Electricity Company to raise additional capital, will be considered by the House of Commons Committee on Unopposed Bills on April 7.

Two Declarations of Calorific Value appear in the issue of the *London Gazette* for March 29. The St. Margarets Gas Company, Ltd., intend to supply gas having a calorific value of 500 B.Th.U. per cu.ft. as from July 1 and the Sittingbourne District Gas Company will supply gas of 475 B.Th.U. per cu.ft. on and after the same date.

The Spring Meeting of the Eastern Counties Gas Managers' Association will be held at Boston on May 19 and 20. Golf and Bowls Competitions will be held in the evening of May 18, Business Meeting, Lunch, and Dinner Dance on May 19, and an inspection of the Works of the Boston Corporation Water Department on the following day.

An Interesting Lecture was given in the Lewes Showrooms on March 29 by Mr. T. B. V. Hirst, of the Ascot Gas Water Company, to the staff of Lewes, Hassocks, and Newhaven Gas Companies, and local hot water contractors on the fixing and maintenance of gas water heaters. The Lewes Company's fine showroom and demonstration theatre are especially suitable for such occasions.

Amalgamation and Grouping

Associated Gas and Water and Bideford.

Shareholders in the Bideford Gas and Coke Company have agreed to an offer made by Associated Gas and Water Undertakings, Ltd., who already control the Barnstaple and Ilfracombe Undertakings, to purchase their shares for a cash consideration or an exchange of shares with their Company. The offer was conditional upon acceptance by holders representing 55% of the shares of the Bideford Company. The Bideford Gas Undertaking was established in 1835, the Works being opened in February of the following year. It took over the Westward Ho! and District Gas Company in 1928, purchasing the Northam, Appledore, and District Gas Company the following year, and in 1931 taking over the Torrington Gas Undertaking.

Women's Gas Council

Warrington Visit Ascots at Manchester.

Over 120 members of the Warrington Branch of the Women's Gas Council travelled to Manchester on Thursday to enjoy a most entertaining afternoon as the guests of Ascot Gas Water Heaters, Ltd. The party first proceeded to the new Town Hall, where they inspected the new showrooms of Manchester Gas Department, after which they adjourned to the lecture theatre.

The afternoon's proceedings were then officially opened by Mrs. Jackson (wife of the Chairman of the Manchester Gas Committee), assisted by Mrs. Cadman (wife of the Commercial Manager and Secretary of the Manchester Gas Department). Two diminutive pupils of Mamie Barber's dancing academy presented these ladies with bouquets. A talk by Mr. T. B. V. Hirst, Assistant to Chief Engineer of Ascot Gas Water Heaters, Ltd., on "Water Heating by Gas" then followed, and many questions were asked by an interested audience. The B.C.G.A. film "Two Frightened Ladies" was then shown, followed by a demonstration on "Beauty Culture." Mr. Leach, Manager of the Beauty Saloons of Affleck & Browns, Ltd., arranged this extremely interesting item, which introduced Thamar Beauty Aids demonstrated by Miss Webber, Beauty Specialist of Messrs. Affleck & Browns and *compèred* by Miss Abbott, a representative of Thamars, of Old Bond Street, London. Afternoon tea was then served in the vestibule of the lecture theatre.

A surprise item was introduced and several gifts were distributed to members having a birthday on Christmas Day, on the day of the reception, and to a member living at a house numbered 24. Cepia Fabrics, Ltd., provided an extremely interesting and instructive mannequin parade in which dresses made from "Cepia" fabrics were shown and a commentary given by Miss Lucia Rodgers. Another film, "Getting Into Hot Water," followed this item, after which a hidden talent search was made. Mrs. Oakes, of Warrington, gave an excellent recitation, and although members of the Manchester Staff of Ascots appeared to give a fine rendering of the well-known song "Villanelle," a call to tea soon proved this to be a hoax, a gramophone record really providing the melody.

Mr. Coe, on behalf of Ascot Gas Water Heaters, proposed an omnibus vote of thanks. The President, Mrs. Poole, expressed appreciation of the welcome extended to all, and Mrs. Burton, Secretary, said she was sure everyone would always remember that day with pleasure. Mrs. Cook spoke of the surprise which the entertainment had given to everyone. The members were subsequently entertained at dinner.

A section of the Fish-Frying Equipment Exhibition held in the hall of the offices of the Newcastle-upon-Tyne and Gateshead Gas Company from March 14 to 26, and referred to in our issue of March 23. The main object of the exhibition was to introduce the Company's special tariff for fish friers to consumers in the area of the South Shields Gas Company, which was, of course, amalgamated with Newcastle on Jan. 1. The exhibition was remarkably successful, and orders for nine ranges, comprising twenty-two pans, were booked. Of these pans, nine were direct gains from solid fuel, eight were additional, and two replacement

B.C.G.A. Eastern District Conference

The Eastern District Conference of the British Commercial Gas Association was held at Cambridge on Tuesday, March 29, on the kind invitation of the Chairman and Directors of the Cambridge University and Town Gas Light Company. The Chair at the Conference, which was held in the Winter Gardens of the University Arms Hotel, was taken by the Chairman of the Cambridge Company, Mr. J. F. Cameron, M.A., and among those supporting him on the platform were: The Mayor of Cambridge, Councillor Ernest Saville Peck, M.A., Mr. A. J. Smyth, M.A., M.B., Ch.B., D.P.H., Medical Officer of Health for Cambridge, Mr. Guy F. Dale, Director of the Cambridge Company, Mr. J. Hunter Rioch, Engineer and Manager of the Company, and Mr. W. D. Rowe, Manager of the British Commercial Gas Association.

Civic Welcome.

The guests were welcomed by the Mayor, who regretted that the Guildhall, which was in the course of construction, could not be the venue of the Conference. The President then gave his Address, in the course of which he drew attention to the importance and object of the Conference, observing that the time was long past when any one unit could deal successfully with all questions demanding scientific consideration, and, therefore, the Gas Industry had become very highly organized under its National Bodies. The Chairman was followed by Sir Bruce Bruce-Porter, K.B.E., C.M.G., M.D., D.L., who paid a glowing tribute to the Gas Industry when he said he knew of no industry which in its development had done, and was doing, more for the health of the community as a whole than this great concern of national importance—the Gas Industry. The foundations of good health, Sir Bruce observed, were laid in the home, but housewifery and domestic work were still secondary considerations in the minds of young women. Marriage was still the greatest event in woman's life, and housewifery the largest profession for womenfolk. This fact stood badly in need of recognition, and he suggested that it might help if every large school, or one or two in a moderately sized borough, were to have a model cottage as part of its equipment, where the senior girls could learn what a different job housewifery was under modern conditions with a gas-equipped home as compared with the bad old days. Anything that could be done to bring women back to the home would make for happiness and health in the nation. Regarding the part every great industry should play in building up an A1 nation, Sir Bruce said he was fully aware, as was also the general public, of the fact that the Gas Industry was very solicitous for the well-being of its employees.

Sir Bruce was thanked for his Address on the proposition of Mr. Guy Dale, and among those contributing to an interesting discussion, which was opened by Dr. Smyth, were Mr. W. W. Townsend (Colchester) and Mr. F. H. Robinson (Bishop's Stortford).

Luncheon.

At the luncheon which followed, the toast of "The Gas Industry" was proposed by Lieut.-Commander R. L. Tufnell, M.P. for Cambridge, and replied to by Mr. George Dixon, B.Eng., M.Inst.C.E., Vice-President of The Institution of Gas Engineers. "The Guests" was honoured on the call of the Chairman, Mr. Cameron, and replied to by His Worship the Mayor.

The afternoon session was spent in visiting the works of the Cambridge Scientific Instrument Company. At the conclusion of the tour of these fine works, tea was taken by the delegates in the canteen on the kind invitation of the Directors.

A.R.P. at Edinburgh

To ensure a continuous supply of gas to Edinburgh in the event of air raids, it was estimated at a meeting of the Public Utilities Committee in Edinburgh on Friday that an immediate expenditure of £60,000 would be required on additional gas valves. It was stated by the Deputy Town Clerk that under the air raid precautions scheme, the Gas Engineer and Manager would require all the members of the staff and probably more during an air raid. The question of providing additional gas valves in order to be able to isolate larger sections of the City during an air raid had also been raised. Mr. Imrie, City Chamberlain, made a statement, following which it was agreed to delay the matter pending national negotiations with the Home Office Air Raids Department on the question of allocating the cost. Mr. Jamieson said that the scheme had already been prepared on paper, but that the districts were already controlled by valves, and that it was only to give a supply following the air raids and to deal with damage in a locality attacked that the extra valves would be required. The whole object of the scheme was to endeavour to maintain continuity of supply.

Western Juniors at Bridgwater

On Saturday, March 26, a very pleasant afternoon was spent by members of the Western Junior Gas Association, who visited Bridgwater. Assembling at the Gas-Works members were welcomed by Mr. J. H. Cornish, Snr., Managing Director of the Company.

A tour of the works followed, and apart from the gas-making plant, there was a new installation of two 40,000 cu.ft. per hour reciprocating gas compressors made by the Bryan Donkin Company. These have been installed to meet the increasing demand in rapidly growing outlying districts. An 80,000 cu.ft. per hour turbo booster installed recently by the same Company serves the centre of the district during "peak" loads. Members were shown round the Works by Mr. J. H. Cornish, Jnr., Works Manager and Secretary of the Company.

After the visit tea was served at the Royal Clarence Hotel at the kind invitation of the Chairman and Directors of the Bridgwater Company. The thanks of the Association were expressed by the President, Mr. J. E. Akroyd (Swindon G.W.R.). Mr. A. E. Manchip, Chairman of the Company, in reply, said he realized the good work done for the various professions by the organized professional bodies. He felt, and his co-Directors were of the same opinion, that the organizations in the Gas Industry were no exception. It had always given him pleasure to assist these when called upon to do so.

Mr. J. H. Cornish, Snr., endorsed what his Chairman had said in regard to support of the "Juniors." He referred to changes which were to take place at the Works, and said he hoped when next the Association visited Bridgwater, they would have something of special interest for the members to see. He spoke of the fact that the Works had been under the control of a J. H. Cornish for 85 years. There was one building erected in 1834 still in use.

Subsequently four questions of a controversial nature were discussed. The first of these was: Is the recovery of benzole from Somerset coal a commercially successful proposition? This topic was discussed fairly freely. It was suggested that the greater influence on the economics of the process was the type of carbonizing plant. Doubt was expressed as to any financial benefit being derived from benzole recovery when the plant operated was steamed vertical retorts and the declared value of the gas supply about 470 B.Th.U. per cu.ft. Mention was made of indirect advantages such as reduction of organic sulphur compounds as a result of oil washing, and the fact that more coke was produced—a desirable aspect at the moment.

The second question considered—viz., Is it possible to extend the domestic lighting load in towns; if so, what steps should be taken?—gave rise to a very good discussion. It was suggested that the electricians kept the prices for lighting high in order to give preferential rates for cooking, heating, &c. Various speakers instanced how efforts were being made to maintain and extend the load. The giving of a free bowl fitting and modernizing fittings in property when vacated was mentioned. It was suggested that all fittings should be of the dispersive type, such as "Howie" burners. A speaker said all gas men (especially gas salesmen) should have gas lighting in their homes.

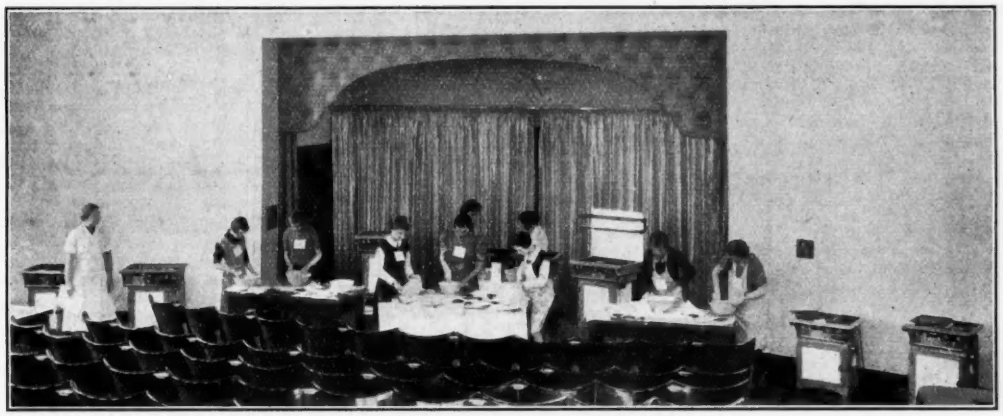
On the topic of maintenance it was held that too much of this was needed, and this was what killed gas lighting. It could be concluded from the discussion that the domestic lighting load was worth keeping, and that more effort should be made by research departments in the Industry to that end.

The third question was: Are the days of the horizontal retort as a carbonizing unit drawing to an end? In discussing this point it was contended that there were four horizontal installations to one vertical. Another speaker said that this did not represent tonnage. It was felt that the tonnage dealt with by each type of plant in the Industry was about the same. All the well-known points for and against the various systems were recapitulated in the course of the discussion. It appeared that all things considered local circumstances would play a large part in any decision.

The fourth question was: To what extent does gum contribute to complaints about the operation of gas appliances? One speaker said that trouble had been overcome in his district by modifying operation of works plant, and that gum complaints formed only about 2% of the total now. This view was supported by other speakers. It was mentioned that with 50 grains per million cu.ft. no trouble was experienced. Two other speakers gave figures of 10 grains per million. It was mentioned that a large amount of gas had to be passed to get a positive result when the gum content was so low as the latter figure.

The President thanked all those who had contributed to the discussions; it had proved that the time available was hardly sufficient. The following, in addition to the President, took part in the discussions: Messrs. A. Tran and S. Hole (Bath), J. H. Cornish, Snr., and J. H. Cornish, Jnr. (Bridgwater), S. H. C. Horrod (Swindon United), B. G. Hawkins (Plymouth), A. Bell (Exeter), S. B. Jones (Clevedon), and G. H. F. Windiate, A. C. Shilson, and K. L. Clark (Weston-super-Mare).

Training To-Morrow's Housewife



In these days of multifarious women's organizations something fresh has been attempted by the Hornsey Gas Company at their new palatial showrooms. Since last October the beautifully equipped demonstration theatre has been used on Saturday mornings as the headquarters of the Cookery Club for Schoolgirls. An average attendance of 45 secondary and high school girls has met each week to receive instruction in cookery and cooker management, as well as other domestic subjects, under the direction of the Company's demonstrators. Practical as well as theoretical training has been given and the girls have had opportunity of using modern appliances under ideal conditions. At half-term the traditional Christmas cakes were made and baked by the girls who applied the almond paste and white icing in a wide variety of design and ornamentation, thus providing a very fine window attraction during Christmastide. The complete syllabus for the Cookery Club course was carefully planned so that every type of household cooking was included and at a recent examination written as well as practical effort determined the winners who were awarded book tokens. Each girl was allotted a gas cooker, individual equipment, and ingredients and left to carry out the making of the cakes set for the test. The examination set a standard of 100 marks, 60 for the written questions and 40 for the practical. The judge, Miss M. C. Hawkins, of the Radiation Research Kitchens, expressed herself as very highly satisfied with the results and congratulated the girls on their efforts. The prizes were awarded on Friday evening last at the same time as those of a cake-baking competition for adults, who sent in over 250 cherry cakes for adjudication. Mrs. Mildred Canivet, of the *Hornsey Journal*, in making the presentations, said the Hornsey Gas Company were on the right lines in teaching the coming housewife how to become an efficient cook, because this was the first and most vital step toward domestic happiness.

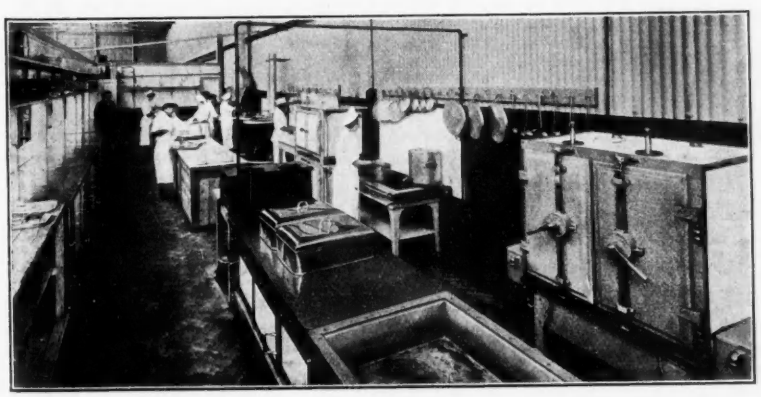
The success of the Cookery Club might lead other undertakings to do something on these lines, and there is no reason at all why a chain of these girls' cookery clubs should not be held throughout the country and some form of competitive examination held whereby the winners could obtain scholarship facility enabling them to continue study at a recognized educational institution teaching cookery subjects. It must be borne in mind, in this connexion, that an efficient trainee will be a big factor in determining the medium to be used for cooking in the future.

Gas at Exeter University Exhibition

An exhibition at University College, Exeter, was arranged by Messrs. W. & J. George, Ltd., the proprietors of F. E. Becker & Co., the well-known laboratory furnishers and scientific apparatus makers, who displayed a full range of scientific instruments of special interest to science teachers who attended in large numbers. The Physics and Chemistry Departments of the University College demonstrated many exceptionally interesting experiments of an advanced nature.

The Exeter Gaslight and Coke Company displayed a large working model illustrating the process of Coal Gas Manufacture, Purification, and Storage. This, with the exception of the meter, was made entirely by the Company's Staff and was worked continuously throughout the three days of the exhibition. It proved a popular attraction and was specially praised by many science teachers who appreciated its educational value. Throughout the period of the exhibition the whole of the exterior of the Washington Singer Laboratories were floodlighted by gas, thirty-six 12-light strip lamps being employed.

Members of The Institution of Gas Engineers will be welcome at a Meeting of the Institute of Fuel on Thursday, April 7, at 6 p.m. in the Meeting Room of the Junior Institution of Engineers, First Floor, 39, Victoria Street, S.W.1, when a Paper by Mr. G. M. Gill and Mr. Leon Jones on "The Manufacture of Town Gas from Fuel Oil" will be presented and discussed.



Industrial Catering

The space available for cooking in these works of a large engineering firm is long and narrow. It will be seen, however, that the lay-out of the equipment gives a clean, spacious working arrangement. The whole of the apparatus in this all-gas kitchen was supplied by Messrs. James Stott & Co. (Engineers), Ltd., of Oldham.

Forthcoming Engagements

April.

7.—**I.G.E.**—Joint Committee on Complete Gasification under Pressure, Fuel Research Station, Blackwall Lane, East Greenwich, S.E. 10, 11 a.m.
7.—**Midland Juniors.**—Meeting and Paper by W. L. Howe, of Nottingham, on "Gas and Filtration and Heating of Swimming Pools."
8.—**North British Association.**—Spring Meeting at Coatbridge.
8.—**Coke Salesmen's Circle.**—Meeting with Coke Distributors' Branch of the L.C.C.A., Gas Industry House, 7 p.m.
9.—**Manchester and District Juniors.**—Annual Dinner. Paper by W. Hodkinson on "Technical Work in a Holding Company."
11.—**I.G.E.**—Finance Committee, 1.45 p.m.; Membership Committee, 2.15 p.m.; Benevolent Fund Committee of Management, 3 p.m.
22.—**B.C.G.A.**—Joint Conference Northern and Yorkshire Districts at Scarborough.
23.—**Western Juniors.**—Annual Meeting at Swindon. Presidential Address by J. E. Akroyd.
23.—**Midland Juniors.**—Visit to Central Laboratories and Automatic Water Gas Plant, Nechells Gas-Works, Birmingham.
23.—**Yorkshire Juniors.**—Meeting at Leeds. Paper by G. F. Murray, of Sheffield, on "Water Heating by Gas."
26.—**I.G.E.**—Gas Education Executive Committee, 11 a.m.; Gas Education Committee, 2.30 p.m.
27.—**Southern Association (Eastern District).**—Meeting at Gas Industry House. Discussion on "Aeration Test Burner Number Control of Town Gas," 2.30 p.m.
28.—**Federation of Gas Employers and National Gas Council in Scotland.**—Annual Meetings, Central Station Hotel, Glasgow, at 11.30 a.m. and 2.30 p.m., respectively.
30.—**London and Southern Juniors.**—Visit to Beckton Gas-Works of the Gas Light and Coke Company.

There will be no meeting of the Central Executive Board of the N.G.C. or of the Central Committee of the Federation of Gas Employers in April.

May

2.—**I.G.E.**—Research Executive Committee, 2.30 p.m.
3.—**I.G.E.**—Finance Committee, 9.30 a.m.; Membership Committee, 10 a.m.; General Purposes Committee, 11 a.m.; Council, 2.30 p.m.
3.—**London and Southern Juniors.**—Annual Business Meeting.
5.—**B.C.G.A.**—Manchester District Conference at Warrington.
5.—**Midland Juniors.**—Annual General Meeting. Address by R. J. Rogers.
6.—**North of England Association.**—Annual Meeting at Newcastle-upon-Tyne.
7.—**Manchester and District Juniors.**—Visit to Rochdale. Paper by H. J. Bradshaw.
11.—**S.B.G.I.**—Annual Meeting and Dinner, May Fair Hotel. Council Meeting at 56, Victoria Street, S.W. 1.
14.—**Scottish Eastern Juniors.**—Annual General Meeting at Dunfermline. Presidential Address of A. C. Rea.
17.—**I.G.E.**—Gas Education Executive Committee, 2.30 p.m.
19.—**Wales and Mon. Association.**—Annual Meeting under Presidency of Mr. J. Stephenson, Aberdare.
19 and 20.—**Eastern Counties Association.**—Spring Meeting at Boston.
21.—**Yorkshire Juniors.**—Meeting at Matlock. Papers by C. W. Hemmingway, A. P. Jennings, and T. W. Pickthall.
21.—**Scottish Juniors.**—Joint Visit to Neasden Works of Ascot Gas Water Heaters, Ltd.
26.—**Midland Association.**—Spring Meeting at Walsall.
31.—**June 1, 2, and 3.—I.G.E.**—75th Annual General Meeting.

June

22-23.—**B.G.F.**—Visit to Empire Exhibition, Glasgow.
24.—**Southern Association.**—Summer Meeting at Lea Bridge.

Commercial New Capital Issue

The Directors of the Commercial Gas Company are offering for sale by tender £140,000 4% redeemable preference stock, 1960-63, at a minimum price of par. The prospectus shows that the dividend is covered more than fourteen times. The last time for the receipt of tenders is 12 o'clock noon on Wednesday, April 13. (For further details see p. 68.)

Prospectuses and tender forms can be obtained from the Secretary of the Company, Harford Street, Stepney, E. 1; Midland Bank, Ltd., 80, Cornhill, E.C. 3, from local branches in the Company's area of supply; and from Messrs. Seymour, Pierce, & Co., 6, Lothbury, E.C. 2, who are underwriting the issue for a commission of 1¼% on the nominal value of the stock.

Athletic and Social

Cheltenham Annual Dinner.

The Cheltenham and District Gas Company's annual dinner was held at Boot's Café on March 25, when Mr. A. L. Morris, Accountant and Sales Manager, presided over a large gathering. He was supported by Mr. S. G. Wood (Chairman of the Company), Mr. H. A. Thomas (Director), Mr. L. E. Twycross (Engineer and Works Manager), Mr. G. F. Ticehurst (Solicitor), Mr. F. W. Morgan Mathews (Director of the Gloucester Gaslight Company), Mr. F. W. Rogers (Secretary, Gloucester), Mr. T. H. Woodcock (Engineer and Manager, Stroud), Mr. W. R. Payne (Secretary, Stroud), and the members of the Staff.

"The Cheltenham and District Gas Company" was proposed by Mr. Morris. In the course of his remarks, Mr. Morris said: "Although the past year, owing to the excellent weather enjoyed, was not regarded as a good gas-selling year, I am pleased to state that a record output was once again attained, and the sales of gas amounted to nearly 716 million cu.ft. It is pleasing to note that our sales have increased during the last 10 years by no fewer than 183 million cu.ft., which is equivalent to over 34%."

Response was made by Mr. S. G. Wood. He said he and the other Directors felt that such gatherings went a long way towards fostering the spirit that they wanted to create among employees and the officials of the Company.

Mr. G. F. Ticehurst proposed "The Visitors." He said they had not on many occasions had the privilege of entertaining guests at their functions, but they were glad that evening to have visitors from the Severn Valley Gas Corporation. "We are now associated," he said, "with gas companies in the county and district in a manner which has never been so in the past, and I cannot help thinking that it is going to be more greatly to our advantage that we should be closely associated with adjoining companies."

Mr. F. W. Rogers briefly responded, saying that the Cheltenham, Gloucester, and Stroud Companies were so closely related as to be one big family, having but one main object—the success of the Gas Industry.

The speeches were interspersed with an excellent variety entertainment.

Tottenham's Splendid Performance of "Libel."

The performance of Edward Wooll's "Libel" by the Tottenham G.A.S. Club Dramatic Section last Wednesday night was a highly creditable effort. Acting by all the cast was polished and bore that delightful naturalness and ease which come so rarely to the amateur; the Hon. Sir Arthur Tuttington, so ably played by Thomas Wesley, was a particularly good example of that quality for it was a part that could have been so easily over-acted. The plaintiff, Sir Mark Loddon, Bart., M.P., provided a very difficult part for Jack Wesley, who acquitted himself very well in more senses than one. Lady Loddon, whose mental torment increases as the evidence tends more and more to create doubts as to the identity of her husband, finally resulting in her distressing alienation followed dramatically by an even more affecting reconciliation, was ably portrayed by Elsie Baillie. "Learned Counsel" were models of their calling and their brilliant rhetoric must surely be the envy of their legal brethren. Counsel for the Plaintiff were Sir Wilfred Kelling, K.C., M.P., and Helen Bale, played by Stanley F. Banyard and Dora A. Clanchy; for the Defendants were Thomas Foxley, K.C., and George Hemsby, which parts were taken by William C. Russell and Arthur W. Barfield. We must be pardoned for failing to mention all who contributed to this splendid performance, but Marjorie M. Brooks, as Sarah Carleton, and Edward G. W. Lunn, as Emile Flordon, are deserving of special note.

The scenery executed by the Dramatic Section was very realistic and the costumes and make-up were excellent. After our encounter with Numero Quinze (Henry J. Bishop) we cannot for the life of us imagine what the Censor considers "horrific" in "Snow White and the Seven Dwarfs"! A splendid programme of incidental music was rendered by the Gasco Orchestra, under the artistic direction of Reginald Bateman. A second performance took place last Thursday night.

Swindon Offer Preference Stock

The Directors of the Swindon United Gas Company offer for sale by tender £38,295 4% redeemable preference stock at a minimum price of issue of £100 per £100 stock. The last time for receipt of tenders will be 12 noon on April 13. Further particulars will be found in our advertisement columns.

Clearing Choked Services

Mechanical Unit

In the January issue of the Bulletin of the National Gas Association of Australia there is an account of a mechanical unit employed by the South Australian Gas Company for clearing rust from service pipes.

The Company, it is explained, commenced clearing rust from both inlet and outlet services by means of mechanical power connected to transport units in 1931; and the small units then introduced (7 h.p. Austins) have stood up to continuous service for six years—an excellent performance.

In that system the power for compressing the air was transmitted to the compressor (placed in the cab) by means of an extended main crankshaft, sprocket wheels, and chain drive to a second motion shaft, which was coupled to the compressor through a cone clutch.

The method has proved most satisfactory, the greatest item of upkeep being broken chains. The noise caused when compressing the air by this roundabout method of transmitting the power, as well as the appearance of the original units, were unattractive features, and, as the time for replacement approached, various methods of improving the units were considered. Finally, it was decided to employ an engine of a higher capacity to perform the work and also to incorporate a simpler form of drive for the compressor. Due regard was also given to the need for improving the general appearance of the vehicle.

Four improved units are now constantly employed and giving every satisfaction.

A special cast steel gear-box has been fitted with a power take-off at the side, which is controlled by an extra gear lever in the cab. The driving shaft is mounted on cross members of the chassis and carried on ball-bearings, while, by means of a morse chain and sprockets, the power is transmitted to the compressor bolted to the floor of the tray.

The five chief advantages claimed for the improved units are: Less noise when compressing air; extra man can ride in cab if required; six-cylinder engine, with increased horse-power (14), means less vibration when compressing air; better appearance of unit; and greater comfort for operators and much simpler and more effective mechanical control.

Routine Adopted.

The routine adopted in clearing services is as follows: The operator, before leaving the depôt each morning, is furnished with a list of the services to be cleared in a prescribed district. On arrival at the destination the engine is left running (with compressor engaged), while the operator disconnects the meter and couples up the ejector to the top of the standpipe. The time required to compress a charge of air in the cylinder to 250 lb. pressure is 2¾ minutes, and this quantity is usually sufficient to create enough vacuum in the service pipe to pull all the rust in the service through the ejector in a single operation. In certain cases, however, two or more charges may be required.

A canvas bag (with a perforated leather double bottom) is tied to the outlet of the ejector to prevent the rust contaminating the atmosphere and creating a nuisance in that way. The amount of dust can easily be ascertained, and, on the average, the quantity recovered from each service would fill a small tea-cup.

The mobility of these units makes it possible to work a programme of clearing all services the day after receiving a complaint. Operators, to avoid travelling to and from the depôt, ring up for instructions twice during each day. Any urgent clearance, therefore, is given special attention the same day a complaint is received. The average number of complaints attended to per unit per day is 9, and the all-in cost of performing such work, including depreciation and working cost of cleaner transport unit, is 3s. per service cleared.

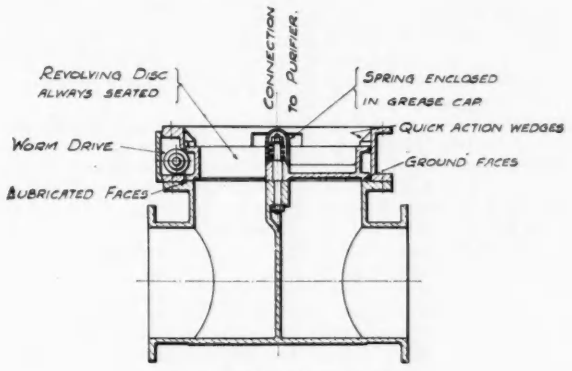
The usefulness of these units is not limited to clearing services only. They are, in every sense, utility trucks, carrying ratchet dies, complete drilling machine, and various essential tools for gasfitters. A pipe bending block and a chain pipe vice are also fitted to each truck. The units, therefore, may be employed on all classes of gasfitting and associated work, such as estimating work on consumers' services, repairs, renewing and relaying of services, laying of new services, and repairs to broken mains.

The system, the description concludes, has proved itself in every way a success, and, with the latest improved cleaner units, is an attractive, speedy, economical, and up-to-date facility for giving consumers good gas service. The adaptability of the unit for transport and the variety of work in which it can be used, together with the relatively lower capital cost, should make it of special interest to small country works, where the "man from the gas-works" is expected to be available everywhere at all times.

Purifier Gas Control Valves

By H. Bott, A.M.I.Struct.E.

Among the many items that came under consideration after it was decided to install new purifying plant at the Shrewsbury Gas-Works was the one of suitable gas control valves. The type of valve used on the existing purifiers was a Weck, and on various occasions gas leakage had been experienced due to faulty seating of the discs. With the idea of eliminating this kind of trouble (and in collaboration with Messrs. Westwood & Wrights, Ltd., of Brierley Hill, Staffs), the design illustrated, which is really a modified form of their well-known patent single-way continuously seated valve, was finally decided upon.



Patent Purifier Control Valve.

It will be seen that the revolving disc is fitted with teeth on its outer periphery, and really forms a worm wheel. The movement of the disc is carried out by means of a worm attached to the operating spindle. The whole of the disc faces in contact are "ground" and grooved, and a system of forced lubrication is fitted throughout. As the disc is rotated to its desired position a set of quick action wedges comes into operation, and so ensures that the disc is firmly bedded upon its seat. To ensure the disc retaining its seat while being revolved, a special spring is fitted on the centre pin. To prevent corrosion the spring is housed in an airtight chamber packed with grease.

The valve is of simple construction, and does not contain any complicated castings or mechanism, and, while it is of robust construction, it is compact, and has a pleasing outline. It is a simple matter to fix a suitable indicator either on the valve itself or, as in the present case, fit an extended spindle with column, indicator, and handwheel above the purifier balcony level.

This type of valve lends itself very well to various arrangements of connexions.

Course for Teachers of Gas Fitting

The interesting course for teachers of Gas Fitting which was held in Birmingham last year will be remembered by those of our readers who attended as students or visitors. A similar course is to be held at the same centre from July 4 to 9 under the general direction of Dr. P. C. L. Thorne, H.M.I. There will be lectures and discussions on teaching methods, the treatment of the syllabus, and on modern developments in technical practice. Visits to recent unusual installations will be made.

No fee is charged to teachers accepted for the course, and under certain conditions grants towards travelling expenses will be made. Comfortable accommodation on reasonable terms for those coming from a distance is being provided at Saltley College. It is hoped that undertakings will encourage the teachers in their employment to attend the course. As accommodation is limited, early application is advisable. Further details and Forms of Application may be obtained from local education authorities or from the Secretary, Gas Education Committee, The Institution of Gas Engineers, 1, Grosvenor Place, S.W. 1.

No. 10, Downing Street

In our issue of March 9 we described the installation for gas control heating and hot water supply at No. 10, Downing Street. In the article in question reference was made to the use of "Pall Mall" radiators, whereas the radiators installed throughout the building are "Ideal Neo-Classic." We regret this error in description.

The "Le Fleuve" Hot Coke Conveyor - -

From a Paper read before a meeting of the London and Southern District Junior Gas Association held on March 15—the SENIOR VICE-PRESIDENT (Mr. S. C. Waldock) in the chair.

by

C. H. WARD, B.Sc.(Eng.), M.I.Gas E., A.M.I.Mech.E.,

Mechanical Engineer, Beckton Gas-Works, The Gas Light and Coke Company.

The First Installation of the "Le Fleuve" System by the Gas Light & Coke Company at Stratford Works.

This installation, built in 1928, was straightforward in design, the hydraulic trough being straight throughout its whole length, serving 15 settings each of ten retorts. The trough, which was made of concrete (reinforced), was 2 ft. in width, 12 in. deep at the water delivery end, and had a gradient of 1 in 75.

After leaving the fifteenth setting, the trough ran straight out of the end of the retort house to a perforated tray plate inclined drainage conveyor. The speed of travel of the coke was approximately 8 ft. per second, the pumps (in duplicate) delivering 90,000 gallons of water per hour and being driven by 21 b.h.p. motors at 1,200 r.p.m.

The moisture content of the coke was ascertained to be: Large coke 4%, small coke 12½%.

Large settling pits were constructed which have a volume of 13,200 cu.ft. and an area of 825 sq.ft. Such a large settling pit is very effective in saving the pumps from the severe erosion which occurs in installations where sufficient space is not available and when the pump suctions are situate directly in the breeze sumps, as in the case of the plants at Beckton.

On the other hand, the cost of impeller renewals is not greater than the interest to be paid on the extra capital which must be found for large settling pits.

The capital cost of this installation was £5,100 and the average maintenance charge over a period of 9 years equals 12·41d. per ton of coke. The total tonnage of coke dealt with up to date is 140,000 tons.

The high maintenance cost of this particular plant is due to the fact that the drainage conveyor is of the inclined tray type, the incline conveyor is the old tray type, and the overhead conveyor serving the main coke hopper is of the drag link design, so that the plant is a hybrid one. Actually, the figure of 12·41d. per ton is made up as follows:

Concrete trough, pumps, and water services	0·16d./ton
Drainage conveyor	4·66d. ,,
Inclined coke conveyor	1·07d. ,,
Overhead drag link conveyor	6·52d. ,,

Description of Plants at Beckton.

The first "Le Fleuve" conveyor installed at the Beckton Works was erected in 1929 in No. 2 Retort House in which there are three benches, each bench having ten settings of ten retorts to a setting.

The trough, 2 ft. in width, was of concrete and ran parallel to the face of the settings at stage level, its centre line being 4 ft. 2 in. from the face of the settings. Each length of troughing served ten settings, but owing to the fact that there were only two drainage conveyors situated outside the retort house, one section was brought out to one conveyor and the other two sections were united by a "Y" piece under the stage floor before being brought out to the second drainage conveyor. The gradient of the troughing was approximately 1 in 75, the rate of fall being uniform throughout its length. In the original arrangement, the first drainage tray conveyor which served ten settings only drained and elevated the coke directly to the boot of the inclined 24 in. rubber belt conveyor which, in turn, delivered it to the shuttle conveyor feeding the coke hopper. In the case of the second drainage conveyor the coke was drained and elevated to a cross belt conveyor which transported it to the boot of the incline conveyor.

On all the Beckton installations water is supplied to the troughs by electrically driven centrifugal pumps which are in duplicate so that one pump acts as a standby. The pumps in No. 7 retort house have a capacity of 150,000 gallons per hour each, but all the others have a capacity of 90,000 gallons per hour each at a maximum head of 30 ft. The delivery pipes are 7 in. diameter and the suctions are 8 in. diameter.

The delivery pipes are so arranged that each section of trough can be separately supplied with water. The bottom of the trough at the shallow end is 1 ft. 6 in. below stage level and at the drainage conveyor end at a depth of 3 ft. 10 in. below stage level. With a delivery of 90,000 gallons per hour the average depth of water in the trough is approximately 4 in. with a velocity of 10 ft. per second.

This velocity is sufficient under normal conditions to carry the coke, on being discharged from the retorts, to the drainage conveyors without choking the troughs. Conditions can, however, arise when choking is liable to occur—*e.g.*, when the speed of pushing is excessive and when the pumps are in bad condition and not delivering the correct volume of water.

The function of the drainage conveyor, as its name implies, is to get rid of any surplus water. The tray plates of this conveyor are perforated with elongated slots which allow the water to drain away with the fine breeze, back to the breeze pit via the concrete troughs situate beneath the drainage conveyors. The troughs are connected directly to the breeze pit.

Slotting.

The degree of slotting is important since it is desirable to maintain the velocity of flow of water up to the drainage conveyor. Insufficient reduction in the plain area of the tray plates will produce a damming effect on the water, whereas too great a reduction in the plain area will permit an excessive amount of coke to pass through. The ratio of slotting to plain plate area for the drainage wheels and conveyors is given in the following table:

——	Drainage Wheel.	Drainage Tray Conveyor.
Slot area	1	1
Plate area	9	4·5
Speed in feet per minute	113 (at centre of bucket)	60
No. of trays or buckets per minute ..	84	70
Slot area per tray or bucket	140 sq.in.	69 sq.in.

Belt Conveyors.

The rubber belt conveyors used for carrying the coke from the drainage conveyors to the coke hopper are of the usual type, the belts being 24 in. in width. The maximum inclination of the belt to the horizontal should not exceed 18°, otherwise the coke tends to roll down the belt and spill overboard. The spillage is most noticeable when the coke is discharged from the drainage conveyors in small quantities, a heavier and continuous discharge of coke lying more snugly in the belt, so that pieces are prevented from rolling. Side boards of oak are carried up the whole lengths of the belts in the case of the cross and incline conveyors, to eliminate spillage as far as possible.

In the case of the shuttle belts which feed the main hoppers, side boards are not required since the belts are horizontal.

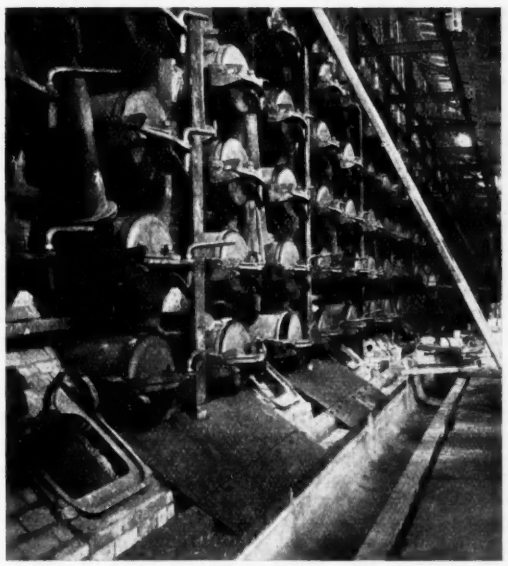
It is found beneficial to increase the number of idler sets at the point of discharge of the coke on to the conveyor. The purpose is to diminish the sag of the belt and so prevent the escape of small pieces of coke under the side boards.

Normally, all idlers, both troughing and return, are fitted with ball bearings. It has been found in practice a disadvantage to apply such bearings to the terminal pulley shafts which are fixed in such a position that they are continuously washed by the hot water draining away from the coke at the drainage wheel or conveyor. The hot water melts and displaces the grease in the bearings, causing failure. Gunmetal bearings of the plain type are more satisfactory in service.

The use of indiarubber belts for conveying hot coke

naturally raises the question of their life. Certainly the appearance of a new belt after a week's work is not such as to inspire hope for a long run. Fortunately, the upper surface of rubber which melts when very hot coke makes contact with it allows the fine breeze to adhere firmly so that the belt is soon covered with a fine layer of coke breeze which acts as a protection against further damage.

No. 2 retort house incline belt carried 128,115 tons from



Concrete Trough laid in position in No 2 Retort House.

June 17, 1932, to Feb. 2, 1933, and the shuttle belt for No. 6 retort house worked for a period of 6 years carrying approximately 480,000 tons of coke. The life of the belts varies, in the main, according to the length of the belts and their position relative to the drainage conveyor or wheel. Usually, the belts adjacent to the drainage conveyors are shortest, receive the hottest coke, and give the shortest life. The shuttle belts, on the other hand, being furthest away, receive coke which has cooled considerably and generally give the longest life.

A new belt should, if possible, be coated with hot Stockholm tar and fine breeze before being put to work.

Having described in brief outline the first installations, it may be of interest to describe in greater detail the essential parts of the system.

The Hydraulic Trough.

The first trough which was installed in No. 2 retort house was of reinforced concrete, made in sections approximately 10 ft. in length, which length suited the spacing of the buck-staves and cast-iron columns supporting the stage floor girders between which the trough supports were fixed. The ends of each section were made with spigot and faucet joints which were grouted up after the trough had been set in position throughout the whole length of the run. The actual length of each section was made $\frac{1}{2}$ in. less than 10 ft. to accommodate the jointing and to prevent accumulative error in the total length of the run of troughing. In cross section the overall width was 2 ft. 8 in., the depth varying. The thickness of the walls was 4 in. and the main reinforcing bars were $\frac{5}{8}$ in. and $\frac{1}{2}$ in. diameter, the binder bars being $\frac{3}{8}$ in. diameter. At intervals of 4 ft., distance pieces were fitted to support the walls of the trough. The concrete mixture was made up of $2\frac{1}{2}$ parts of granite chippings $\frac{5}{8}$ in. down to $\frac{1}{4}$ in., $1\frac{1}{2}$ parts of clean sharp sand $\frac{1}{4}$ in. down, and 1 part of Portland cement.

Considerable care must be taken in casting the trough, attention being given to the positioning of the reinforcing bars to give the correct cover of concrete to the bars. The feeding and ramming of the cement into the moulds should also be carefully done. Inattention to this allows moisture to percolate through the concrete and reach the steel reinforcing which rusts and expands, thus cracking the concrete.

The second trough fitted to No. 2 retort house in 1937 was modified slightly, the wall thickness being increased to $4\frac{1}{4}$ in. and the wall distance pieces omitted. Basalt tiling has been set in the concrete at the bends. These tiles are extremely hard and are set in a special cement preparation known as "Karatex" which is an elastic cement.

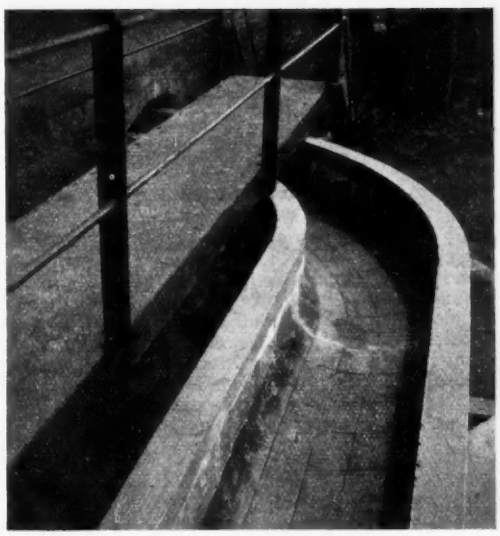
Nos. 1, 5, 6, and 7 retort houses have all been equipped with cast-iron troughs, Nos. 1 and 5 originally without steel liner plates, No. 6 with a 12 in. wide by $\frac{1}{2}$ in. "Bearco" liner, and No. 7 with a $\frac{3}{8}$ in. "Bearco" steel liner plate covering the bottom and sides of the trough to a height of 1 ft. above the bottom. The length of the sections is approximately 10 ft. and the thickness of the walls $\frac{3}{4}$ in. with adequate stiffening ribs.

Life of Troughs.

As a result of seven years' experience with the concrete trough in No. 2 retort house and four years with the cast-iron trough in No. 1 retort house, there is little doubt that the concrete trough is the better proposition. It can be easily and rapidly patched by floating a new surface of concrete when worn, whereas the cast-iron trough without any steel liner plates is perforated in about 18 months and the process of relining the bottom with "Bearco" $\frac{3}{8}$ in. plating necessitates the making of special dies for pressing the plates to shape and then finally welding the joint to make the trough lining continuous.

The wear at the bottom of the trough takes place over a well-defined track about 4 in. in width due to the abrasive action of the coke as it trails along with the water. Any irregularity in the joints between the lengths of troughing produces local penetration and is caused, presumably, by the local eddies set up in the water, the fine coke breeze supplying the abrasive. This effect is very noticeable in the case where steel liner plates have been fitted into the cast-iron troughs and the end edges of the plates left unwelded. After a time the edges of the plates are cut away.

At the bends the nature of the wear takes a different form,



Basalt Tiling in Trough.

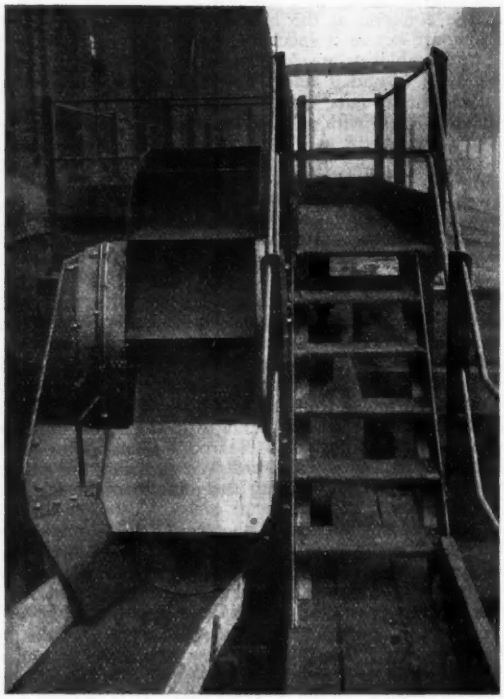
the maximum wear rising from the bottom of the trough to the side having the greater radius. This is due to the centrifugal effect of the water as it negotiates the bends.

Drainage Wheels, Conveyors, and Grids.

Various means have been applied for the purpose of separating the surplus water from the coke—viz., the per-

forated plate tray conveyor, the drainage wheel fitted with perforated buckets, and the grid.

The tray conveyor was first used in the Company's installations at Stratford and No. 2 retort house, Beckton. These



Drainage Wheel at No. 2 Retort House.

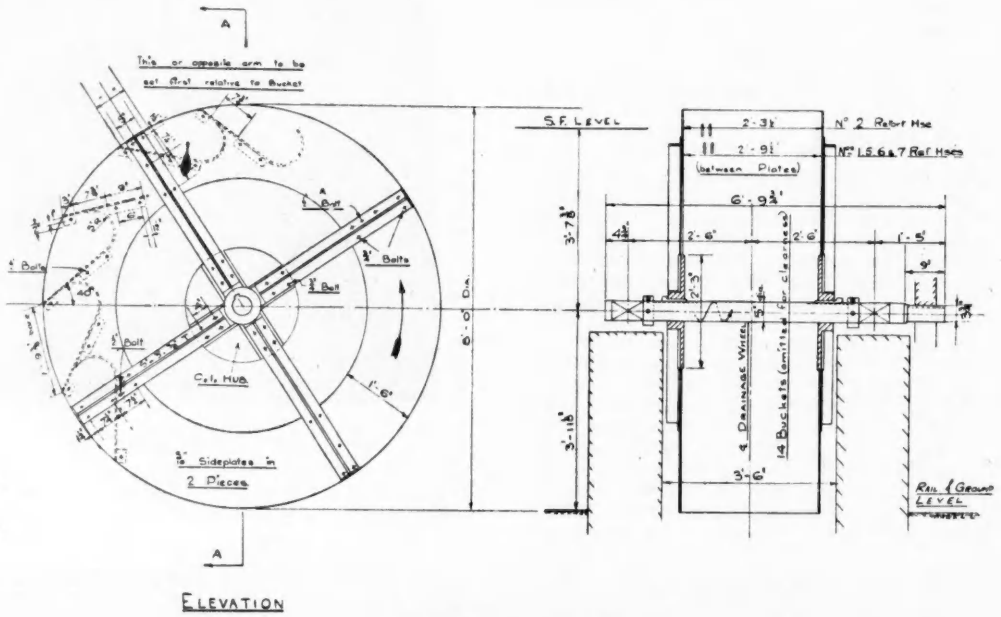
conveyors, which are inclined at angles varying from 30° to 35° to the horizontal to suit local conditions, consist of a series of perforated trays attached to two side chains which are carried over 6-sided tumblers at the top and bottom of the conveyor, the length of the sides of the tumblers being arranged to suit the pitch of the chain. Three teeth were originally fitted into alternate sides of the tumblers, but it was found that when the pitch of the chain increased through wear fouling occurred. The teeth were eventually omitted without in any way interfering with the satisfactory working of the conveyor.

Each tray is fitted with a cross angle bar to hold the coke during its upward travel. The number of trays to the conveyor varies, of course, in each case, but the average is about 70, the pitch of the trays being 10 in. The links of the chain are made of double shear steel and the wearing strips are of the same material.

Considerable wear and tear was found to take place with this type of conveyor particularly with the links and pins in the side chains. The wearing of the pins and holes in the chain links increased the pitch of the chain leading eventually to uneven riding of the chain over the 6-sided tumblers. This fault could not be corrected by means of the take-up gear attached to the lower terminal. The wearing strips also wore rapidly and the trays, when worn thin, had a tendency to buckle and foul when folding over the tumblers.

As a result of the heavy maintenance on this item, experiments were undertaken by the Chief Engineer of the Gas Light and Coke Company, Mr. R. W. Hunter, on the development of a rotating wheel fitted with buckets. A very suitable site for carrying out these experiments was found over the settling pits of an old Hardy Pick breeze washing plant. A temporary pump and hydraulic trough with shoots was rigged up, together with the experimental drainage wheel. The wheel was modified in various ways. Originally, the side plates were perforated, while the buckets were formed of plain plates backing on to an inner circumferential perforated plate. This arrangement did not control the flow of the water satisfactorily and the drainage was poor. Different widths of wheels were tried with varying volumes of water until the present shape of bucket and width of wheel was reached.

The arrangement of the delivery chutes was also found to be important, various slopes and positions being tried. It was finally found that two chutes from the wheel gave the best results and cleared the buckets most effectively. Even so, to reduce the leakage of coke to the breeze pit, a circular wrapper plate fitting closely to the periphery of the wheel and extending from the extreme edge of the hydraulic trough to the lower chute was found necessary. Having completed these investigations to his entire satisfaction, Mr. Hunter lodged a provisional patent for his device, but it was found



Drainage Wheel—All Houses.

that such a type of drainage wheel had already been patented by Dr. Charles Carpenter.

Dr. Carpenter, on being acquainted with this singular result of concurrent investigation, very willingly granted my Company permission to use the wheel, and it is, therefore, to this gentleman that my Company are indebted for the use of a particularly simple and effective device for draining the coke. Wheels have now been installed in Nos. 1, 2, 5, 6, and 7 retort houses at Beckton.

The wheel is made up of two side ring plates $\frac{5}{16}$ in. thick, 8 ft. outside diameter, and 5 ft. inside diameter. Each ring is attached to a centre cast-iron boss by means of 4-5 in. by 3 in. by $\frac{3}{8}$ in. tee bars acting as spokes of the wheel. The perforated plate buckets, 14 in number, are supported between the two ring plates. The delivery slope of each bucket when the outer edge cuts the horizontal is 40°, the opening between buckets being 1 ft. $9\frac{3}{8}$ in. The inner radius of the buckets is 5 in. and is tangential to the adjacent bucket lip. The actual depth of the bucket, measured from the outer periphery, is approximately 1 ft. 2 in.

The overall width of the wheel, measured inside the ring plates, is 2 ft. $3\frac{1}{2}$ in. for No. 2 retort house and 2 ft. $9\frac{1}{2}$ in. for Nos. 1, 5, 6, and 7 retort houses.

Buckets of Drainage Wheels.

The most effective speed for the wheels has been found to be 6 r.p.m. or 113 ft. per minute at centre of the bucket or 84 buckets passing the delivery end of the trough per minute.

The life of the wheels varies between 60,000 and 80,000 tons of coke. When a new wheel is required it is an easy matter to lift the old one out and replace it with a new one. Slight variations in the details of design have been made, the buckets have been made detachable so that they can be separately renewed and, again, an outer wearing ring has been fitted, thus enabling the worn edge to be replaced when necessary to prevent spillage of the coke between the end of the delivery trough and the side rings of the wheel.

The bottom of the hydraulic trough, at its delivery end, is usually arranged at a level 3 in. below the horizontal centre line of the drainage wheel and a special mild steel junction plate is attached to the end of the trough and brought as close as possible to the periphery of the wheel. During the initial stages of starting up a retort house it has been found necessary to adjust the clearance between the wheel and this junction plate to allow for the travel of the hydraulic trough through expansion.

Breeze and Settling Pits.

Of the five retort houses equipped with the "Le Fleuve" conveyors it was not found possible to provide sufficient area for a settling pit and, consequently, breeze pits were built. The pits for Nos. 1 and 7 retort houses were modifications and enlargements of the old breeze pits, whereas those for Nos. 2, 5, and 6 retort houses were newly constructed. The pits are formed of three sections—viz., the main pit, varying in depth from 16 ft. to 22 ft., the draining shelf, and the pump suction pit.

The size and shape of the pits vary considerably, the volume and shelf areas not being proportional to the quantity of coke dealt with per day. Satisfactory working conditions for the pumps can, however, only be obtained by regular clearing of the deposited breeze.

The following table gives the approximate volumes and shelf areas provided:

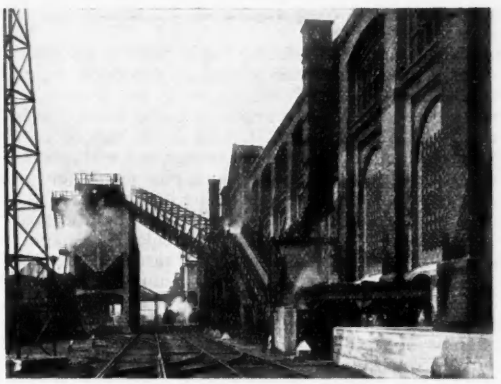
Retort House.	Size of Retorts.	Coal per Day, Tons.	Gross Volume, Cu.Ft.	Net Volume, Cu.Ft.	Area of Breeze Shelf, Sq.Ft.
1	24 × 16	465	8,440	5,800	433
2 (original)	22 × 16	380	9,560	7,450	288
2 (modified)	22 × 16	380	6,810	5,505	288
5	22 × 16D	440	11,415	7,215	315
6	24 × 16	465	11,955	8,955	342
7	24 × 16	465	9,612	6,372	500

NOTE.—Gross volume is volume below ground level.
Net " " " " inlet pipe.

Reinforced concrete has been used in the construction of all pits and no piling has been provided as the depth of the pits is sufficient to reach the marl.

Pumping Plant.

The pumps for all the "Le Fleuve" conveyors at Beckton are situated outside the retort houses and are fixed on a concrete foundation which is an extension of the breeze pit, no pump houses being provided. The water circuit is so arranged that the water flows from the breeze pit via the 8 in. pump suction and pump, through 7 in. diameter cast-iron delivery piping to the troughs, thence to the drainage conveyor or wheel, and returns to the breeze pit either by concrete troughs as in the case of No. 2 retort house and No. 7 retort house or by 18 in. cast-iron piping as in the case of Nos. 1, 5, and 6 retort houses. The pumps for Nos. 1, 2, 5, and 6 retort houses are of the Gwynne "K-L" horizontal centrifugal type and those at No. 7 retort house are Gwynne "Invincible" type.



External View of No. 7 Retort House, showing Incline to Hopper.

Tests have been carried out on the pumps to determine the velocity and depth of water in the troughs, with the following results:

Retort House.	Velocity.	Depth of Water in Trough.	Delivery (Nominal).	Length of Straight in Front of Bench.	Width of Trough.	Diameter of—	
						Suction.	Delivery.
	Ft./Sec.	In.	Galls./Hr.	Ft.	Ft. In.	In.	In.
1	9	$3\frac{3}{4}$	90,000	150	2 6	8	7
5	8·5	$3\frac{1}{4}$	90,000	100	2 0	8	7
6	9·55	$3\frac{3}{4}$	90,000	105	2 6	8	7
7	12	$5\frac{1}{2}$	150,000	105	2 3	14	12

The wear on the pumps is considerable, the life of the impellers varying from five to ten months, and is due to the abrasive nature of the fine coke carried in the water. The pump casings also require renewal about every two years. The pump impellers are of cast steel with cast-iron pump bodies. In order to reduce the wear and so prolong the life of the pump bodies and impellers, tests were carried out by Messrs. Gwynnes on various metals, and a list of the results is shown below. The metals were subjected to a corrosion test with water taken from the breeze pits.

Material.	Brinell No.	Ultimate Tensile, Tons/Sq.In.	Corrosion in Grammes per Sq.Mm. per Day.
Cast iron, standard grade	174	11·0	105
No. 1 nickel iron	201	12·8	92·5
Phosphor bronze	88·7	14·6	1·68
Barronia metal	163	35·75	1·1
Manganese bronze	118	19·2	42
Hard phosphor bronze	107	17·3	3·4
No. 3 nickel iron	217	13·8	55
Monel metal	156	34·0	2·12
Staybrite (Firths')	167	36·7	2

As a result of the above findings, it was decided to try out pumps constructed wholly of No. 3 nickel iron and Barronia

metal, keeping in view their relative Brinell values and cost of the materials.

The cost of pumps made in various metals was found to be as follows:

	£	s.	d.
Cast iron body and cast steel impeller	57	10	0
No. 3 nickel iron body and impeller	67	10	0
Cast-iron body and phosphor bronze impeller.. ..	63	0	0
All Barronia metal	104	18	0

The nickel iron pump and impeller was put into commission at No. 5 retort house on May 13, 1936, and the "Barronia" pump put to work in the same house on April 1, 1937. Examination of the nickel iron pump indicates that the life will be little better than the cast iron body and cast steel impeller combination, and although it is too soon to form a definite conclusion with the Barronia metal, there seems little prospect of obtaining twice the length of life which is desirable having regard to the initial cost of the pump.

The main factor in producing rapid wear is no doubt the coke breeze, and when the breeze is effectively taken out before reaching the pump suctions, as in the case of settling pits provided with a large number of baffle weirs, the life of the pumps is increased considerably. On the other hand, where large quantities of coke are being dealt with, the labour involved in clearing out the settling pits would be greater than that required for clearing out the breeze pits.

The bottom of the suction pipe to each pump is provided with a strum box of ample area, circular in shape, with vertical $\frac{5}{8}$ in. diameter bars arranged around the circumference, the spaces between the bars being not greater than $\frac{1}{2}$ in.

The make-up water required for the breeze pits varies with the different houses from 2,000 to 2,500 gallons per day. The initial temperature of the water at the beginning of a draw is, on the average, about 140° F. and rises at the end of each draw to about 150° F.

Condition of Coke.

Size.—Tests were made on the coke produced in Nos. 4 and 5 retort houses with the object of determining the effect on the coke size of the "Le Fleuve" conveyor. No. 4 retort house is equipped with the "De Brouwer" drag-link chain. Large samples, 7 to 9 tons, were drawn daily and continued over a period sufficiently long to eliminate the effect of variations of the coal carbonized; the large quantity of coke sampled ensured that the coke tested was representative of the coke produced from each retort house. Shatter tests were made daily from the large coke obtained.

Nos. 4 and 5 retort houses are alike in layout and the operating conditions are similar.

Sampling.—During each of the 6 a.m., 8 a.m., 10 a.m., 12 noon, and 2 p.m. draws, the coke from two retorts in "push" rows and the remaining coke from "fire" rows was taken for grading.

The coke was screened into three sizes—viz., 0-1¾ in., 1¾-3 in., and over 3 in.—by means of a rotary screen.

After screening the coke was weighed and a ½ cwt. sample from each retort house of the over 3 in. size was sent to the laboratory for shatter test.

In test I., which extended over a period of 11 days, comparisons are made between the two houses when using a mixture of stock and hopper coal, while test II., which was carried out over 7 days, deals with the coke from the houses when using hopper coal only.

It is evident from the results obtained that the "Le Fleuve" method of quenching and conveying the coke produces a smaller amount of large coke than the "De Brouwer" conveyor.

In the cases of the mixed coal, the large coke in No. 5 retort house was 15·1% as against 18·1% in No. 4 retort house and for hopper coal the values were 17·6% and 22·8% respectively. On the combined tests the difference was 3·8% at 16·1% to 19·9%.

It is interesting to note that when carbonizing hopper coal alone, the large coke percentage is increased in both houses. in No. 5 retort house by 2·5% and in No. 4 retort house by 4·7%.

The shatter tests show little difference under the conditions of either system.

Test No. I.—Jan. 1 to 11, 1935.

Retort House.	Grading Test. 0–1¾ In.	1¾ In.–3 In.	Over 3 In.	Shatter Test. 2 In. Index, %.	1½ In. Index, %.	Coal Carbonized, % Hopper Coal.
4	35·5	46·4	18·1	70	83	30·5 } Average of
5	37·6	47·3	15·1	68	82	33·5 } 9 tests

Carbonizing Conditions.

—	No. 4 Retort House.	No. 5 Retort House.
Average weight per charge	12·66 cwt.	13·47 cwt.
Average combustion chamber temperature	1,360° C.	1,365° C.
Average duration of charge	10·4 hours	10·0 hours
Average weight of daily sample	7·25 tons	8·9 tons

Test No. II.—Jan. 13 to 18, 1935.

Retort House.	Grading Test. 0–1¾ In.	1¾ In.–3 In.	Over 3 In.	Shatter Test. 2 In. Index, %.	1½ In. Index, %.	Coal Carbonized, % Hopper Coal.
4	31·4	45·8	22·8	68	82	100 } Average
5	32·2	50·2	17·6	68	82	100 }

Carbonizing Conditions.

—	No. 4 Retort House.	No. 5 Retort House.
Average weight per charge	13·09 cwt.	13·79 cwt.
Average combustion chamber temperature	1,365° C.	1,366° C.
Average duration of charge	10·5 hours	10·2 hours
Average weight of daily sample	7·20 tons	9·0 tons

Moisture Content.

As a result of a very large number of tests the large coke has been found to contain from 2% to 4% (over 3 in.) moisture and the broken coke (0-1¾ in.) from 10% to 12%.

Costs.—The installation and maintenance costs are given in the following appendices:

Appendix I.—Capital Costs of "Le Fleuve" Coke Conveyors.

Appendix II.—Comparison of Maintenance Costs for Retort Houses.

Appendix III.—Detailed Analyses of Comparative Maintenance Costs.

APPENDIX I.

Capital Costs of "Le Fleuve" Coke Conveyors.

—	No. 6 Retort House. £	s.	d.	No. 7 Retort House. £	s.	d.
Hydraulic troughing	1,150	0	0	1,640	0	0
Two pumps	126	0	0	280	16	0
Two electric motors for pumps ..	100	0	0	287	16	0
Valves	28	13	9	46	2	6
Company's work	1,569	16	4	2,498	8	5
Coke and ash plants	3,677	11	11	3,336	0	0
Breeze pit and ash hopper	2,549	6	9	2,411	2	9
Motors, control gear, and cables ..	2,301	10	11	2,592	10	5
Chutes and steam stacks	166	5	0	251	19	6
Railway alterations	187	6	1	—		
Demolition	440	2	3	281	0	0
Administrative	363	17	4	412	0	7
Totals	£12,660	10	4	£14,037	16	2

APPENDIX II.

Comparison of Maintenance Costs for Retort Houses.

No. 1 RETORT HOUSE.

"De Brouwer" Drag Chain. Year.	Coke Tonnage.	Cost per Ton, Pence.	"Le Fleuve" Conveyor. Year.	Coke Tonnage.	Cost per Ton, Pence.	Cost per Ton of Coal Carbonized. "De Brouwer," Pence.	"Le Fleuve," Pence.
1927	94,143	6·9					
1928	115,522	6·8	1933	94,257	2·2	5·6	1·4
1929	87,649	8·1	1934	86,795	3·2	5·0	2·1
1930	57,031	10·3	1935	97,150	3·9	6·2	2·5
1931	68,189	9·7	1936	106,864	3·5	6·1	2·3
Average		7·92			3·2	5·7	2·1

No. 2 RETORT HOUSE.

"De Brouwer" Drag Chain.			"Le Fleuve" Conveyor.			Cost per Ton of Coal Carbonized.	
Year.	Coke Tonnage.	Cost per Ton, Pence.	Year.	Coke Tonnage.	Cost per Ton, Pence.	"De Brouwer," Pence.	"Le Fleuve," Pence.
			1930	79,658	4·4		
1924	87,087	8·6	1931	74,418	6·0		3·6
1925	56,319	8·2	1932	79,064	3·8		2·3
1926	82,128	8·4	1933	76,940	4·1		2·4
1927	85,127	8·3	1934	77,443	4·5		2·8
1928	59,957	9·9	1935	57,740	5·6	6·0	3·3
1929	26,919	8·4	1936	77,801	4·7	5·4	2·8
Average		8·6			4·7	5·7	2·9

No. 5 RETORT HOUSE.

"De Brouwer" Drag Chain.			"Le Fleuve" Conveyor.			Cost per Ton of Coal Carbonized.	
Year.	Coke Tonnage.	Cost per Ton, Pence.	Year.	Coke Tonnage.	Cost per Ton. Pence.	"De Brouwer," Pence.	"Le Fleuve," Pence.
1928	80,777	6·8				4·2	
1929	83,673	7·8				4·9	
1930	70,420	11·2	1934	89,356	1·9	7·0	1·2
1931	47,675	9·3	1935	96,912	2·6	5·5	1·6
1932	8,451	8·2	1936	93,620	4·5	5·1	2·7
Average		8·4			3·0	5·3	1·8

APPENDIX III.

Detailed Analyses of Comparative Maintenance Costs.

No. 1 RETORT HOUSE.

—	Coke Made.	Hot Coke Troughs and Conveyors.		Inclines.		Hoppers, Conveyors, and Services.		Motors.		Water Services.		Control Switchgear.		Total.	
		Cost, £.	Pence per Ton.	Cost, £.	Pence per Ton.	Cost, £.	Pence per Ton.	Cost, £.	Pence per Ton.	Cost, £.	Pence per Ton.	Cost, £.	Pence per Ton.	Cost, £.	Pence per Ton.
1927–1931 Drag chain ..	422,534	5,602	3·1	3,606	2·0	4,252	2·4	406	0·23	305	0·17	46	0·03	14,217	7·92
1933–1936 "Le Fleuve"..	385,066	2,644	1·64	589	0·36	1,408	0·88	156	0·09	339	0·21	98	0·06	5,234	3·2

No. 2 RETORT HOUSE.

1924–1929 Drag chain ..	397,537	6,877	4·15	2,832	1·10	3,569	2·16	643	0·4	344	0·2	52	0·03	14,317	8·6
1930–1936 "Le Fleuve"..	523,064	5,673	2·63	1,548	0·71	1,524	0·70	792	0·36	613	0·28	169	0·08	10,319	4·76

No. 5 RETORT HOUSE.

1928–1932 Drag chain ..	290,996	4,989	4·11	2,819	2·32	1,950	1·6	353	0·3	348	0·28	30	0·02	10,489	8·6
1934–1936 "Le Fleuve"..	279,888	1,690	1·45	656	0·56	697	0·59	189	0·16	240	0·2	94	0·04	3,566	3·0

Discussion.

The SENIOR VICE-PRESIDENT (Mr. S. C. Waldock, of the Gas Light and Coke Company) opened the discussion by congratulating Mr. Ward on his most informative Paper and reminding members that they would have the opportunity of seeing the plant to which he had referred when they visited Beckton on April 30.

Mr. K. C. MEAD (Gas Light and Coke) remarked that the figure of 12·4d. per ton at Stratford was very high, and it had been reduced considerably in all the retort houses at Beckton. This reduction in cost was due very largely to the use of belt conveyors which were rendered possible as a result of the adoption of the Le Fleuve system. It was difficult to use belt conveyors with the drag link system because of the trouble involved in the quenching of the coke, which otherwise damaged the belts. For No. 2 retort house the troughs were made outside the house, and they already had some interesting experiences of the effect of different methods of making them. In some cases the insides of the troughs were rough, while in others they were smooth. This was due to the making and ramming of the cement mixture: if it was rammed too heavily the larger aggregate was pushed to the bottom of the mould, which in turn became the inside of the trough. They proposed in future to coat the bottom of the mould with a thick cement grout, so that when the shutters were struck and the mould reversed the thick cement would be on the inside or wearing part of the trough. Mr. Mead thought, perhaps, that Mr. Ward had given a wrong impression in regard to the moulding of the basalt tiles. The makers had moulded these tiles quite successfully for No. 2 retort house and had made them fit the inside contour of the trough. The tiles were sent numbered, and they were set according to the plan supplied. He thought this was the first time that the firm had undertaken this careful moulding of tiles for a specific job. They were very satisfactory indeed, and the cement, which was a peculiar "rubbery" material, seemed to be holding well. The distance pieces in the old trough were intended for the use of the flue cleaners; but the top flues were found not to get stopped up, so they were not proceeded with.

It was originally thought, continued Mr. Mead, that when the Le Fleuve conveyor was installed they would get larger coke by reason of the fact that with the de Brouwer chains there was a tendency to smash the coke. But in fact the reverse occurred, and the houses equipped with the Le Fleuve system were producing smaller coke. Nobody could believe that at first, although the coke department insisted that it was so. The red hot coke fell immediately into warm water and steam formed instantly within the coke itself, which had an explosive effect and broke up the coke. The moisture in the coke was no more with the Le Fleuve system than with the drag link system, although it was bathed in water in the former. The explanation was that the coke was in the water for such a very short period—only 20 to 30 seconds—and the red hot core quickly dried the outside skin. The costs in No. 2 retort house were high by reason of the drainage wheels and the fact that the Le Fleuve system was first tried there and a great deal of experimental work had been carried out, which had been charged against it.

Mr. G. H. S. DU PONTET (Gas Light and Coke) asked for more precise information as to the time contact necessary in the trough. Mr. Mead had just mentioned a period of 20 to 30 seconds. Figures were given of the length of the trough in front of the setting and the speed of travel of the water; from those it was evident that there was a considerable length of trough not in front of the settings, and a compromise must be reached because the coke from certain settings would obviously reach the drainage wheels more quickly than that from other settings. He enquired what would be the minimum and maximum time contact of the coke with the water in order to give a suitable moisture content. In regard to the drainage of the inclined conveyor, would it not be possible to increase the length of the sides of the tumblers by bolting on short lengths of angle-iron to the outside? Also, could Mr. Ward give them any information on making good the inside of the trough when it became worn? This would be useful not only to those concerned with the Le Fleuve system, but there were many occasions on the works when one wanted to repair concrete which was exposed to high temperatures.

Mr. WARD said that the time contact of the coke with the water was extremely difficult to follow by reason of the tremendous steam cloud; but it appeared that 10 seconds was the maximum desirable. Actually the large pieces of coke were buoyed up considerably and were not entirely immersed in the water, which was the reason for the moisture content being greater in the smaller coke. But it was difficult to observe what really did go on. It would be possible to put additional angle-irons on the conveyor links, but whatever size the tumblers were there would always be differences on the chains, causing uneven riding and eventual fouling; he had seen tumblers which were not gripping

at all. The only sure method of repairing the troughs seemed to be gradually to cut the old trough back until one reached the "virgin" concrete and then put in an ordinary die plate before dealing with the surface. Trowelling tended to displace what had already been put on. The surface with which one had to deal should be thoroughly cleaned beforehand.

Replying to another question, Mr. MEAD observed that the cause of fires in the coke was not so much due to the coke coming from retorts nearest the drainage wheels being improperly quenched; that was to say, it was not due to short time contact, but rather to tarry ends which fell on to the top of the partially open doors and flared up rapidly. In reply to a question as to whether he had any experience of a Le Fleuve conveyor in retort houses where the trough could not be placed close to the retort mouthpieces, Mr. WARD said there was such a plant at Folkestone, where the trough was some 6 ft. from the mouthpieces. It was so arranged that the shoot swivelled and as the bus travelled along it was centre-lining with the trough.

Mr. E. E. CALVERT (Gas Light and Coke) corrected Mr. Ward's statement of the number of settings at Stratford to 22. He believed that this was the longest conveyor which had been put in; it had a travel of 490 ft. per minute, and coke from the first setting was only in for 30 seconds. His experience from taking coke samples from the first setting and from those towards the end was that there was very little, if any, difference in the moisture content.

Mr. C. W. M. ROGERS (Gas Light and Coke) observed that the water for the Le Fleuve conveyor came from the Thames, which was tidal at that point. The result was that when there was little water coming down the river the salt content was apt to reach a very high figure indeed—and the salt content of the coke breeze went up. They had had considerable trouble on this account with the breeze supplied for boilers.

Mr. WARD agreed that the composition of the water at Beckton was very difficult to state. It might vary from 11 grains of salt to as much as 1,100 grains per gallon in times of drought.

Capt. W. TREEBY (Bryan Donkin Company, Ltd.) suggested that the wear of the pump was due not only to the material handled but also to the design of the pump itself. Mr. Ward had stated that the impellers had to be changed every five to ten months and the pumps every two years. But Capt. Treeby said that he had had eight pumps installed since 1928 and up to the present time he had supplied eight spare impellers and no new pumps at all; nor was there any sign of the pumps requiring to be replaced. They worked under identical conditions to those of Mr. Ward, and their normal capacity ranged from 1,500 gallons per minute at a pressure of 20 to 40 ft. and a speed of 950-1,200 r.p.m.; the motor required was 17-20 b.h.p. A great deal of power was going to be lost in friction alone. The least charge against the coke would be 3d. per ton; yet he was informed that 2½d. would be considered expensive. Pump efficiency was an indication of the correct design of the pump, and this varied from 55% to 86%. The velocity they aimed at in the trough was in the neighbourhood of 10 ft. per second, which would reduce the time the coke was in contact with the water and should, theoretically, reduce the water in the coke, which should be about 5%; in maximum cases, however, it was as much as 12%. With reference to the various metals used in the pumps, Capt. Treeby said his experience was that special cast-iron was perfectly satisfactory. Impellers of this material had been in service for many years, and it was found that after a time they became coated with a hard deposit.

Mr. WARD said it might be that the settling pits removed most of the breeze; but those at Beckton did not. They had a slurry which was very hard on the pumps. The original pumps at Stratford were of steel, which might produce the excellent results mentioned by Capt. Treeby. But Mr. Ward was convinced that one could not evade the corrosion of the pump impeller. He felt that the most satisfactory type would be the rubber lined pump. Experience in other directions had resulted in pumps of tissue paper thickness after twelve months; but rubber linings resisted breeze and there was no possibility of wear. Barronia metal gave better results than nickel iron; the latter proved very disappointing. The conditions under which the pumps worked were very important; but he could hardly believe that the design of the pump would make such a big difference. He could not see how any pump could resist coke particles coming in contact with the impeller blades.

Capt. TREEBY agreed that the coke particles must pass through the pump, but the impellers could be so designed as to reduce the eddies and swirls and changes of direction to a minimum. That was necessary if an efficient pump was desired. Wear would occur if the even flow of material over a surface was disturbed.

Mr. D. M. MCCASKGILL (Tonbridge) said that smaller works often had an advantage over larger works in quenching and handling costs by reason of the fact that there were many methods which could be adopted on a small works which were unsuitable in a large. The cost of the conveyor and quenching would be between 3d. and 11d. per ton. That big difference depended entirely on the layout of the retort house and referred to maintenance alone; the capital cost would appear to be between 2½d. and 3d. per ton, including all renewals, bus, skips, and quenching. On a small works the moisture content of the coke would vary according to the disposition of the stoker, and in this connexion, on a certain works he knew of, the quenching was done by an automatic system, so that only a certain quantity of water was allowed, after which it was cut off. The maximum moisture content in this case was 6%.

Mr. WARD replied that the cost of the Le Fleuve system was one-half to one-third of that of the de Brouwer. In certain retort houses, however, there were times when the cost rose due to considerable overhauls. He had taken a five-year period in order to get the figures he had set out in the Paper.

Replying to a further question, Mr. Ward said that the major portion of the steam was developed outside the retort house; it was not objectionable inside the house except for a back-rush in the trough under the stage floor. In spite of the steam stacks it was difficult on humid days to prevent a certain area from being "blotted out." The only way to avoid this would be to cover in the runs and install fans. The actual condition of the steelwork had not shown any marked increase of deterioration as a result of the Le Fleuve system; in fact, it was in a better condition.

Asked whether the heat had any detrimental effect on the concrete of the trough, Mr. Ward said that once the trough was heated up the radiation from the settings maintained the temperature. Most of the damage was due to the percolation of moisture and the rusting of the reinforcement. Expansion and contraction did not in themselves cause any harm.

Mr. F. O. HAWES (Tottenham) observed that in No. 2 retort house, where the Le Fleuve system showed to least advantage, a period of six years was covered, whereas in No. 1 house the period was three years and in No. 5 two years. Had this anything to do with the high maintenance by reason of such ills as there were showing up over the longer period?

Mr. WARD said that No. 2 retort house was the first in which the system was installed, and it was largely in the nature of an experiment. Considerable modifications were carried out, which accounted for the high cost. Nos. 1 and 5 houses more nearly represented the truth as regards the normal maintenance costs. On the other hand, No. 2 house provided more practical experience, such as the life of the concrete trough. After five years the trough certainly looked in a bad condition; but it was still the better proposition because the cast-iron trough, although it looked very nice at first, looked just as bad after two years if it was not lined in the first place.

It was pointed out by a member in conclusion that it was the aggregate that counted and not the cement in the trough. It was the cement which wore away—not the aggregate. There was no material which stood abrasion so well as basalt tiles.

"Frostiness" in Plumbers' Solder

An investigation on the working properties of plumbers' solder having a frosty surface has just been carried out by the British Non-Ferrous Metals Research Association with the aid of funds provided by the International Tin Research and Development Council which has now published the results in Technical Publication Series A, Number 73.

Because bad working properties and frostiness may both be produced by traces of impurity, frostiness has come to be considered an almost infallible indication of inferiority. Frostiness is, however, produced on good solder cast into an overheated mould and is due in this case to the growth of large crystals. The report describes how solders were prepared with smooth and frosty surfaces and then used by practical plumbers. It is concluded that frostiness is not invariably a sign of poor solder.

Copies of the above publication may be obtained free of charge from the International Tin Research and Development Council, Manfield House, 378, Strand, London, W.C. 2.

Peebles & Co., Ltd., Gas Engineers

To avoid any possible misunderstanding in connexion with the financial results which we published last week of Bruce Peebles & Co., Ltd., Colonel W. Carmichael Peebles sends us the following particulars:

D. Bruce Peebles & Co., Gas Engineers, was founded in 1866 by the late Mr. D. Bruce Peebles. In 1898 he decided to form a branch devoted to electrical engineering. It developed so rapidly that our Tay Works were soon too small, and large new works were erected at East Pilton, Edinburgh. A new Company was formed under the name Bruce Peebles & Co., Ltd., including the Gas Department.

In 1908 the original gas business was separated and reformed as a private Company under its present title of Peebles & Co., Ltd., Gas Engineers, Gas Meter and Governor Manufacturers, Tay Works, Bonnington, Edinburgh.

British Gas Light Company, Ltd.

The Two Hundred and Seventh Ordinary General Meeting of the British Gas Light Company, Ltd., was held at the Chief Office of the Company, 2, The Abbey Garden, Westminster, S.W. 1, on Wednesday, March 30—Mr. HENRY WOODALL, M.Inst.C.E. (Chairman and Managing Director), presiding.

The SECRETARY (Mr. A. J. Mumford) read the notice convening the meeting, together with the report of the Auditors. The Directors' Report and Statement of Accounts for the year ended Dec. 31, 1937, were taken as read.

THE CHAIRMAN'S ADDRESS.

The CHAIRMAN said: This is our 207th Ordinary General Meeting. It does not mean we are 207 years old, as we used to have half-yearly meetings, but we have been established 114 years—age has not withered us—our Chief Officials are young and energetic, and I can say with confidence the Company has never been better served.

The result of the year's working (1937) is that after payment of debenture and other interest and preference dividends, there is available £58,244—nearly £2 000 more than in 1936. Out of this sum an interim dividend of 3½% has been paid, and if the usual final dividend of 4% is paid and £10,000 transferred to the General Reserve Fund, the balance forward will be £81,028—slightly more than the amount brought in. Further, there has been an increase in the Station Reserve Funds which now stand at £73,561, and additions have been made to the Pension and Superannuation Funds which now total £138,298.

The year has been one of steady effort, without any sensational happenings so far as the Company is concerned. All of our undertakings—there are now forty, including the Chatteris Gas and Coke Company, Ltd., which was acquired during the year—have been well maintained, and reconstruction work and renewals and additions to plant have been carried out wherever necessary.

There has also been considerable main laying, for the purpose, in large measure, of furnishing supplies of gas to new housing estates, which does not always mean increased consumption but merely expenditure to retain existing consumers removed through slum clearance schemes. This is particularly the case at Hull and Norwich, our two largest undertakings, and it may be of interest to note that in the Company's area of supply at Hull 2,624 houses have been demolished under Corporation schemes since 1931 and, unfortunately, a number of families were rehoused outside the Company's limits of supply. At Norwich some 700 houses were demolished during last year alone. In these new housing estates electricity is installed, whereas the lighting in the demolished properties was almost entirely by gas. This is one factor contributing to the reduction of 1·23% in our total sales which has to be recorded and was practically due to the falling off at Hull and Norwich.

In this connexion it must be remembered that these two Stations have not benefited from the rearmament programme; indeed, Norwich has suffered by the removal to another town of the aircraft section of an important firm.

Some of the smaller undertakings also showed reductions in sales, but the majority enjoyed increased business, quite substantial increments being recorded by some, although there was a day less than in the previous year, and the mild spring and winter, coupled with a lack of sunshine during July, were not at all conducive to increased consumption of gas. As I have said before, Mr. Therm with all his charm and persuasiveness can be heavily handicapped by the elements.

The continued replacement by up-to-date apparatus of less efficient appliances also has an important bearing, and, whilst it is sound policy, does tend for the time being to reduce the average consumption per consumer. The reduction which has been suffered is not viewed with equanimity, however, either by the Directors or the Officials, and every effort is being made to secure the installation of additional appliances such as gas fires, water heaters, refrigerators, and the like. As evidence of our activity in this direction, it may be mentioned that during the year some 15,500 appliances were disposed of at a selling price of nearly £93,000—a very satisfactory increase over previous sales.

The Directors have also standardized a semi-enamelled cooker for prepayment consumers and for simple hire, which will gradually replace the black cookers; and although this involves a substantial sum of money, it will be of great assistance in combating competition and in retaining our valuable cooking load.

Although, as mentioned earlier, the Company has not enjoyed any material benefit from the rearmament programme, it has had to bear the consequent heavy increases in cost of materials, and has also had to meet higher charges for coals and a further increase in wages, and it is gratifying to be able to report such a satisfactory year in spite of all these adverse factors.

Coal.

It seems to the ordinary citizen an extraordinary thing that Parliament will not legislate to protect the consumer against the Coal Monopoly but propose instead to accept certain assurances which have no legal validity. Some of us are a little nervous about what are known as "gentlemen's agreements."

We have had to pay considerably enhanced prices for coal, and it is unsatisfactory to find that we are seriously hampered in our dealings with the collieries. They, the collieries, with whom we have had satisfactory dealings, in many cases for generations, and who know our special circumstances and difficulties, can no longer settle price and quality without reference to a Committee who may be quite ignorant of our particular requirements. We may take some comfort from the thought that in the end prices are governed by supply and demand, and ultimately will find their own level.

Hire Purchase Bill.

Gas companies sell appliances primarily to facilitate and encourage the use of gas, and hire purchase enables consumers to enjoy the benefits of the many labour-saving gas appliances which they cannot afford to buy in any other way. The effect of the Bill, which is aimed at removing abuses, which no one suggests could ever be charged to the Gas Industry, will be to restrict facilities which are much appreciated by the poorer section of the consumers, and it is hoped that when the Bill comes up for the report stage Parliament will decide to exempt Public Utility Undertakings.

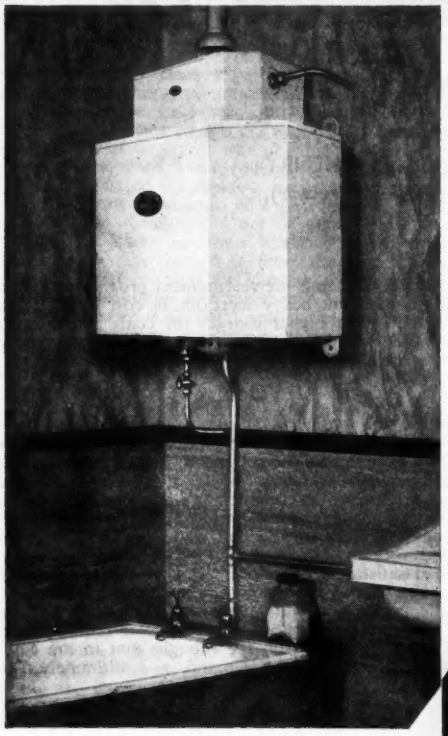
As a contribution to the country's defence programme, which day by day assumes more vital importance to us all, the Directors have issued instructions that any employee belonging to the Territorial Forces is to be granted special leave of absence with pay to enable him to attend the annual training camp, which special leave is not to be counted as part of his annual holiday, and the Directors feel sure that the stockholders will be in agreement with this decision.

The Company has applied to the Board of Trade for further powers in respect of the Hull Station, primarily for the purpose of increasing the amount which is authorized to be expended there. For some few years past the capital employed at Hull has been in excess of the maximum at present allowed, and the result of the Order will be to permit of an increase in the profits which can be received from that Station. The application was approved by the stockholders at an Extraordinary General Meeting on Dec. 8, and as there is now no opposition it is hoped that the Order will be made shortly.

We have also applied for a Special Order in respect of the Fenny Stratford Station. This is in compliance with a Notice received from the Board of Trade under Section 9 of the Gas Undertakings Act, 1934, and the stockholders will be asked to approve the application at an Extraordinary General Meeting to be held after this Meeting.

In addition, we have in hand an application for an Order for the Maldon Gas Light Company, Ltd., which has also been made in compliance with a Notice under Section 9 of the Act of 1934.

The story I have told you is perhaps, on the face of it, not very encouraging. There has been a decrease in output; the cost of nearly all materials we use has risen about 20% and in some cases more; wages have gone up and competition is increasingly severe. In spite of all these adverse conditions, we had a successful year and did not increase the price of gas in any of our undertakings. You will ask how this is managed. The reply is the price of residuals has gone up, we have made more of these residuals for sale per ton of coal and we have kept a very strict watch on all expenditure. It looks as if we have little further prospect of economy, and I should be somewhat despondent if I did not realize the number of good and able men in the Gas



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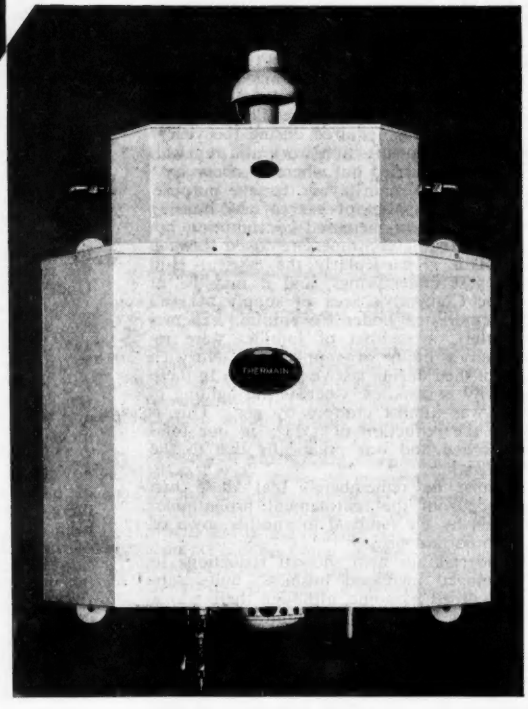

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Industry, of which we have some in our old Company, who are by no means satisfied that there are no further improvements to be made. Some of you, no doubt, read the very admirable Address recently given by Sir David Milne-Watson at the Fuel Luncheon Club in which he said: "Research is, in truth, the very foundation of our path of progress." That is the truth, and while we realize and act upon it we shall have no need to fear the future. A great deal of research work is being carried on in the Industry, and what is vitally important is that it is being pooled for the benefit of us all. We do a certain amount of useful research ourselves, and we are members of the Gas Development Centres and can apply to them for help and advice, always freely given. The Gas Light and Coke Company alone spend over £100,000 a year on research work of inestimable value. I have no doubt whatever that as time goes on we shall obtain from coal more and more valuable products, to the benefit of our consumers and ourselves.

The death, in November last, of our senior Auditor, Mr. E. Knowles Corrie, broke an association of fifty-four years' standing. The Directors did not fill the casual vacancy, and the accounts on this occasion have, as will be seen, been audited by the surviving Auditor, Mr. William Cash, Jnr., alone. It is not necessary, under the Company's Articles of Association, to appoint two Auditors, as has been the practice in the past, and the Directors feel that this is an appropriate occasion for suggesting to the stockholders that they should appoint, as is becoming very customary nowadays, a firm of Chartered Accountants as Auditors. To facilitate this, Mr. William Cash, Jnr., has, as is mentioned in the Report, signified his intention not to seek re-election in person, and Messrs. Cash, Stone, & Co. are nominated for election as Auditors of the Company. The necessary resolution will be proposed by one of the stockholders here present, and the Directors commend it to your favourable consideration.

The results achieved could only have been obtained by the combined efforts of all concerned. Your Directors are fully conscious of the good work of their Officials, their staffs, and the large body of manual workers, and thank them for the excellent results they have done so much to secure.

The CHAIRMAN then moved that the Report and Accounts be received and adopted and entered on the minutes of the meeting.

The DEPUTY-CHAIRMAN (Mr. Harold G. Palmer) seconded, and the resolution was carried unanimously.

Replying to remarks by Mr. F. R. W. SLY, the CHAIRMAN observed that the Company purchased undertakings out of such funds as were available at the time. At present they found it convenient to have a loan from their bankers. There were no outside Directors in their subsidiary companies, and this simplified the management. They would bear in mind the suggestion for printing the comparative figures of the previous year's accounts alongside those of the current year. The decreased output of gas at their larger Stations was somewhat offset by increases at a number of the subsidiary Company Undertakings.

Dividends.

The CHAIRMAN thereafter moved:

> That the payment by the Directors of the Dividends at the rates of 7% per annum, less income-tax, on the cumulative preference stock, and 5½% per annum, less income-tax, on the "B" preference stock, as mentioned in their report of March 21, 1938, be confirmed.

This was seconded by the DEPUTY-CHAIRMAN and unanimously agreed.

The CHAIRMAN also moved:

> That the payment by the Directors of the interim dividend at the rate of 3½%, less income-tax, on the ordinary stock, as mentioned in their report of March 21, 1938, be confirmed, and that a final dividend on the ordinary stock at the rate of 4%, less income-tax, making 7½% for the year, less income-tax, be now declared, the same to be payable on April 5 next; and that the dividend warrants be sent by post to the last known address of each proprietor, unless instructions have been received to the contrary.

This resolution was also seconded by the DEPUTY-CHAIRMAN and unanimously agreed.

Re-Election of Directors.

The CHAIRMAN moved the re-election to the Board of Mr. Graham Wilkin and Mr. H. G. Palmer, being the two Directors retiring by rotation. He paid tribute to the value of these two gentlemen to the Board and referred to the fact that both their families had long associations with the Company.

The two resolutions were carried unanimously.

Appointment of Auditors.

On the proposition of Mr. KENNETH R. MACKAY, seconded by Mr. A. J. WEST, Messrs. Cash, Stone, & Co., Chartered Accountants, were appointed as the Company's Auditors, in succession to Mr. William Cash, Jnr., and the late Mr. E. Knowles Corrie.

Mr. WILLIAM CASH, Jnr., acknowledged the appointment on behalf of his firm and at the same time paid tribute to the late Mr. E. Knowles Corrie.

Votes of Thanks.

On the proposition of Mr. SLY, seconded by Mr. WEST, a hearty vote of thanks was accorded to the Chairman and Directors for their able management of the business of the Company.

In reply, the CHAIRMAN said they were a very happy Board and thoroughly enjoyed working for the Company. He went on to move a vote of thanks to the Secretary, Officers, staff, and workpeople. They were indebted to them all. The older officials had ably trained the younger men who followed them, and they were all first-rate men. He had recently visited Norwich to present long-service certificates and medals to the men. After twenty-five years' service the Company presented the manual workers with a medal and certificate, together with a five-pound note. To the members of the staff they gave a medal and certificate and a silver cup. It was interesting to know that the last medal he had presented brought the total up to nearly 650, which showed that the people who worked for them were satisfied with their conditions.

In acknowledging the vote, the SECRETARY said he would have the greatest pleasure in conveying their thanks to the officers, staffs, and workpeople. They would be as appreciative as he was and would wish him to express to the Board on their behalf their sincere thanks for the consideration, encouragement, and help they received in the performance of their duties.

EXTRAORDINARY GENERAL MEETINGS.

At two Extraordinary General Meetings which followed, the Company's application to the Board of Trade for a Special Order under the Gas Undertakings Act, 1920 to 1934, for conferring statutory powers upon the Company with respect to their Fenny Stratford Undertaking was approved, as was also a resolution that the capital of the Company be increased to £1,750,000 by the creation of 250,000 shares of £1, available for issue upon such terms and conditions and with such rights, preferences, and privileges as the Directors shall determine.

Gas Undertakings' Results

Tunbridge Wells.

Dividends for the year 1937 by the Tunbridge Wells Gas Company at the rates of £7 4s.% on the sliding-scale stock and 5% on the maximum stock will leave the sum of £27,157 to be carried forward to the credit of the current year. The capital expenditure during the year has been trifling, a good deal less, in fact, than the amount written off as depreciation, the result being to reduce the debit balance at Capital Account to £10,612. The total quantity of gas sold during the year was 2,525,407 therms.

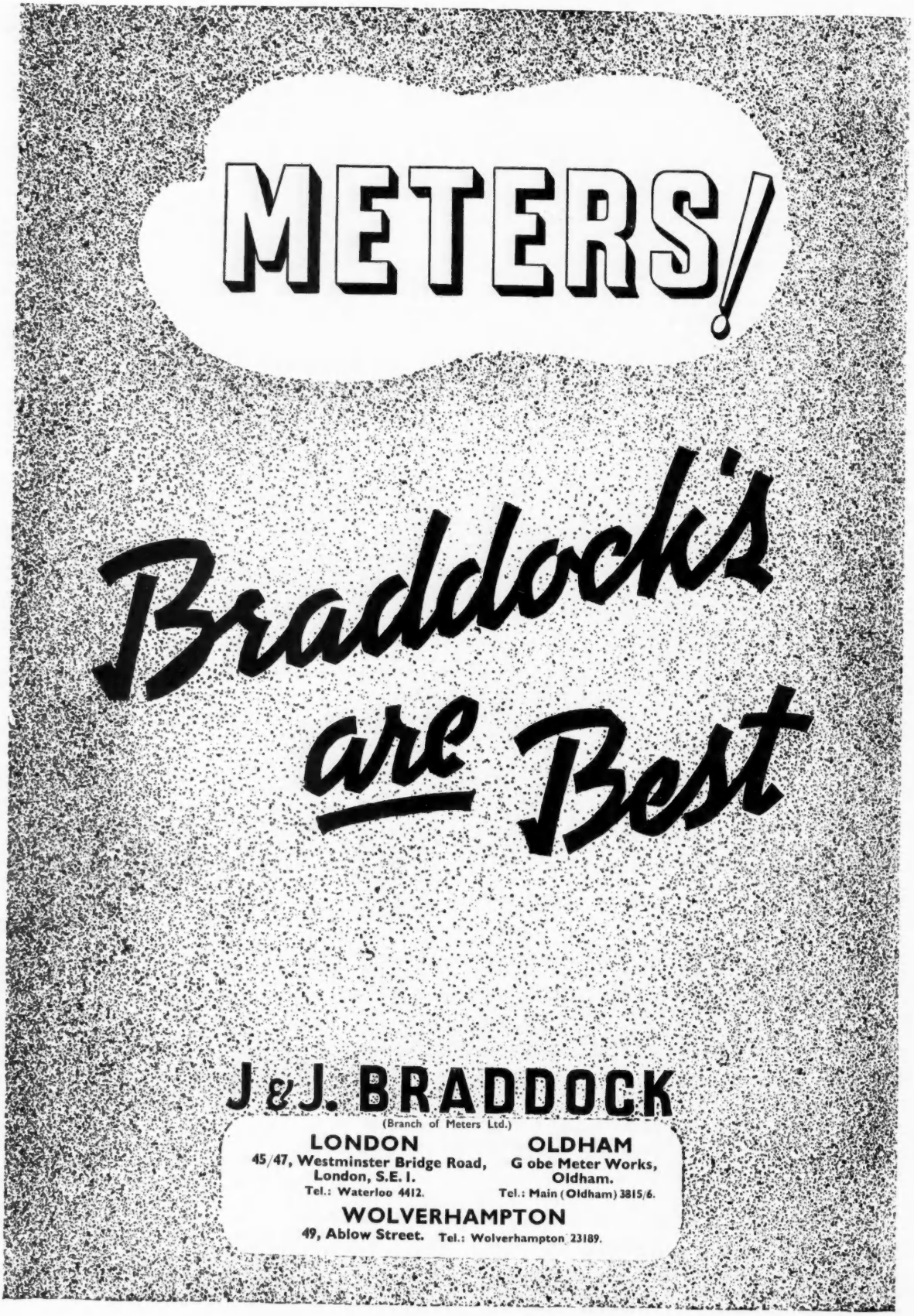
Wellington, N.Z.

For the year 1937 a dividend of 8% on the ordinary shares is being distributed by the Wellington (New Zealand) Gas Company, Ltd. This will leave a balance of £18,854 to be carried forward. The net profit for the year is £27,660. To meet growing demands, 3 miles of new mains were laid, and considerable capital expenditure was incurred for additional purifying plant, compressors, and buildings. No fewer than 1,218 services were fixed. All domestic gas cooking appliances, as well as gas meters, are manufactured in the Dominion. Land tax and city rates on the Company's Courtenay Place property amount to £1,283, which is equal to £11 per foot of the street lighting. The land tax paid for the past year was six times greater than the amount paid in 1935.

Windsor.

The Windsor Royal Gas Light Company sold 189,990,000 cu.ft. of gas, or 949,950 therms, in the past year. The dividends for the year are 12½% on the original 10% basic dividend shares, and 8¾% on the new 7% basic dividend shares. This will leave £3,796 to be carried forward to the credit of the current year, as compared with £4,324 brought in. There was an addition during the year to the capital expenditure of £3,753, which brings the balance at debit of Capital Account to £18,208.

(For further Gas Undertakings Results see pp. 60-61.)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(Branch of Meters Ltd.)
LONDON
45/47, Westminster Bridge Road, London, S.E. I.
Tel.: Waterloo 4412.
OLDHAM
G obe Meter Works, Oldham.
Tel.: Main (Oldham) 3815/6.
WOLVERHAMPTON
49, Ablow Street. Tel.: Wolverhampton 23189.

TRADE NOTES

Braddock's New Works.

We learn that Messrs. J. & J. Braddock, Gas Meter Manufacturers, of London and Oldham, have opened a Works at 49-51, Ablow Street, Wolverhampton. The telephone number is Wolverhampton 23189. It is hoped this will prove of great convenience to the many Gas Undertakings in the Midlands in expeditiously executing orders for new meters and repairs.

West's Rotinoff Shell Pile.

Among the advantages claimed for the West's Rotinoff Shell Pile are that the bearing capacity can be calculated, cross-section cannot vary, the interior may be inspected from top to bottom after driving and before the core is concreted, there is no waste since only the necessary length is paid for, and there is less vibration and noise so that the system can be used close to or inside existing buildings. Another feature of the system is its peculiar adaptability for carrying out work in confined spaces; this is due to the mobility of the plant which can be used in conjunction with the particular characteristics of the West's Rotinoff pile design. Readers will find much of interest on this subject in a booklet recently issued by West's Rotinoff Piling and Construction Company, Ltd., Columbia House, Aldwych, W.C. 2.

Ewart's "Advance" Bath Water Heater.

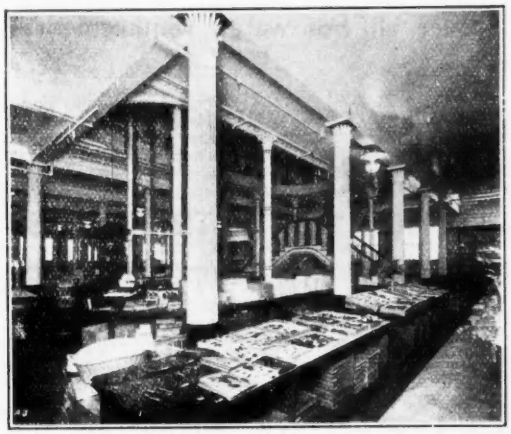
The latest production of Messrs. Ewart & Son, Ltd., 346-350, Euston Road, N.W. 1, is the "Advance" bath water heater, which is of the non-condensing type. This water heater is fitted with safety thermo cut-out, and constant gas governor, and has an output of 2¾ gallons raised 40° F. per minute. The gas control, water tap, and swivel spout are chromium plated.

A feature of the "Advance" is its neat appearance; it fits flat against the wall and has a depth of only 7 in. This heater, and also the "Empire"—a new type of water heater which can be used as a multi- or single-point as required—will be on view at Olympia during the "Ideal Home" Exhibition. The firm state that the "Empire" should have a special appeal to gas undertakings, as it is designed to ensure the utmost economy in fixing and to reduce maintenance costs to a minimum.

"Foochow" Liquid Wall Glaze.

Considerable interest was aroused at the recent B.I.F. at Birmingham in the display of "Foochow" Liquid Wall Glaze included in the exhibit of Messrs. Donald Macpherson & Co., Ltd., of Manchester and London.

Many Gas Engineers visiting the stand had actual experience of the good results obtained from using Liquid Wall Glaze. Its applications are very numerous and it is very suitable for use on new and old walls, floors and interior fittings, plant, machinery, pipeways, and interior and exterior woodwork.

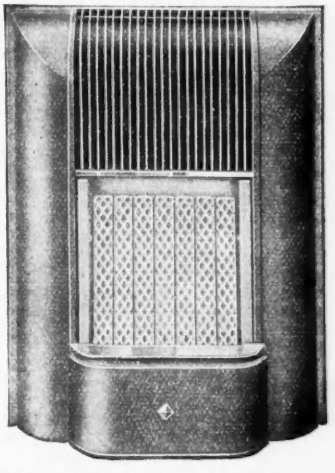


A Showroom interior treated with "Foochow" Liquid Wall Glaze.

Easy to apply and economical in cost—a finish giving the hygienic advantages of tiles at the cost of ordinary painting—Liquid Wall Glaze can be used throughout factories, engine rooms, mess rooms, and store rooms and works, giving a brighter and cleaner environment—a matter stressed in the new Factory Act. Colour charts showing many colourful schemes are available and can be had free on application to the manufacturers.

A New "Hurry" Fire.

An interesting new fire has lately been introduced by the Hurry Water Heater Company, which combines the usual radiant heat with convection. The latter is achieved by means of staggered vertical fins on the canopy of the fire whereby the products of combustion are "scrubbed" between the radiants of the flue outlet.



The new "Hurro" fire is equipped with duplex gas injector, standard long radiants, cold catalyst ignition, and vitreous enamelled flueways. The 7-radiant model has a normal gas rate of 14,000 B.Th.U. per hour, and the Florentine bronze finish and chromium-plated "grill" give the fire an attractive and distinctive appearance.

This firm have also introduced two new gas radiators—one of the heated-air output type and the other of the radiant panel type. These are manufactured in three alternative sizes with gas rates of 4,000, 6,000, and 9,000 B.Th.U. per hour, a feature of the apparatus being that the outer case is removable as a whole by means of two screws.

Whessoe Woodall-Duckham Electro-Detarrers.

"Electrical Precipitation" is by no means a new process and for many years it has had various successful commercial applications. It is only during the last ten years, however, that it has been widely adopted for the removal of tar-fog from coal and coke-oven gas in this country. The Whessoe Woodall-Duckham electro-detarrer has been marketed since 1932, and has played an important part in bringing the electrical precipitation process to the forefront for the removal of tar-fog from gases. Even during the last six years there have been many developments in the systems marketed so that the present-day plant is a vast improvement on its early predecessors. This is particularly so from the point of view of efficiency, smooth trouble-free reliable operation, and of the safety interlocks which preclude any possibility of risk arising from the use of the high voltage required. The basic principles of the W. W.-D. system are sufficiently well known to require no elaboration in these columns but the following details of plants are of interest: They are usually designed for a gas velocity of 3 to 7 ft. per second, the tubes are from 6 to 8 in. diameter and 9 to 12 ft. long, and the required voltage varies from 25 to 60 KV. The current consumption is very low, ranging from 0·2 to 1 mA. per tube, and the power consumption is likewise very low. The pressure drop through the apparatus is almost negligible, varying from $\frac{1}{8}$ to $\frac{1}{4}$ in. w.g. Upwards of 99·9% of tar-fog is removed from gas treated in a W. W.-D. detarrer and all tar recovered is in salable form. A great feature of this system is its capacity for a high overload with a small reduction in efficiency. The saving in the cost of oxide purification where electro-detarrers have been installed is very widely appreciated; owing to the absence of tar-fog particles the efficiency of oxide purification process is improved, less back pressure is thrown, and the boxes need changing less frequently.

These and many other advantages are claimed for the W. W.-D. detarrer in a handsome brochure recently published by the Whessoe Foundry and Engineering Company, Ltd., 25, Victoria Street, S.W. 1. Having set forth the basic principles of the system, the brochure deals with installations in many different situations. The firm have now supplied, or have under construction, 32 W. W.-D. detarrer installations for various branches of the carbonizing installation.

Gas Undertakings' Results

Buenos Aires.

In their report for the year 1937 the Directors of the Primitiva Gas Company of Buenos Aires, Ltd., say that the balance of Revenue Account, converted at par of exchange, amounts to £445,167, and after providing for the various charges detailed in the Profit and Loss Account there remains a balance of £186,026. Adding to this the sum of £71,313 brought forward from the previous year gives a total of £257,339, from which the Directors allocate to Depreciation and Renewals Reserve £95,000, and to Contingencies Reserve £20,000. A dividend of 2½%, free of income-tax, leaves £74,851 to be carried forward. Compared with 1936 currency revenue at par again shows a slight increase. Throughout the year exchange rates were maintained at a higher level than in 1936. This is reflected in the debit for the exchange loss for the year (£135,362), which is lower than in 1936, despite the increase in currency revenue. At the end of January of this year, however, the free market exchange rate (at which a considerable part of the Company's revenue is remitted) suffered further depreciation. In order to make some provision against the effect of any such future fluctuations, the Board have increased the allocation to Contingencies Reserve from £10,000 to £20,000.

Laurencekirk.

At the annual meeting on March 29 of Laurencekirk Lighting Society, Mr. J. M. Howie presiding, it was reported that 9,081,300 cu.ft. of gas had been sold during the year at £2,499, an increase of £164, while residuals fetched £118.

Maryborough (Queensland).

From Queensland there comes the report for the six months ended Dec. 31 of the Maryborough Gas and Coke Company, Ltd. This states that the gas sales show a slight increase as compared with the corresponding period of 1936, and that residuals also are up, due to more tar sales. On the present occasion the expenditure is slightly less, and after writing off £400 for depreciation the profit amounts to £1,047, out of which the Directors recommend payment of a dividend at the rate of 5% per annum, which will leave the sum of £62 to be carried forward.

Minehead.

An increase of 1·16% in the sales of gas during 1937, as compared with 1936, is reported by the Directors of the Minehead Gas Light and Coke Company, Ltd. The actual quantity sold was 289,249 therms, or 61,411,700 cu.ft., an increase of 3,330 therms, or 707,000 cu.ft. Over the year there was a net gain in consumers of 43. The dividend for the year on the original ordinary shares is 8%, leaving a balance to carry forward of £1,386. The amount brought from the previous year was £1,278. The Capital Account is over-spent to the small extent of £6,940.

Monmouth.

Quite a good increase in gas sales is announced by the Directors of the Monmouth Gas and Water Works Company, Ltd., in their report for the year 1937. The sale, exclusive of the quantity that was used internally, was 156,018 therms, representing an increase of 10,886 therms over the previous year, or 7·5%. There were 374 ordinary gas consumers and 929 prepayment consumers connected with the Company's mains at the close of the year. Dividends at the full statutory rates on the three classes of shares will leave a sum of £4,187 to be carried forward. No capital expenditure was incurred during the year, so that the total outlay in excess of the amount paid up remains at £4,528.

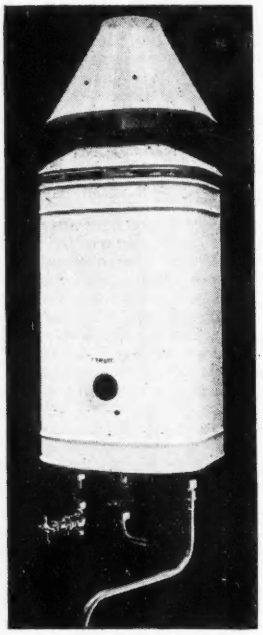
Narborough.

The year 1937 witnessed a substantial increase in the sales of gas and in the number of consumers of the Narborough, Blaby, Enderby, and Whetstone Gas Light and Coke Company, Ltd. The dividend for the year on the ordinary capital is 7½%, and the transfer of £240 to reserve leaves £3,731 to be carried forward. The amount brought in was £3,181. An increase during the year of nearly £2,000 to the capital expended, leaves the Capital Account with a debit balance of £2,406.

Prescot and District.

Among the big increases in sales of gas during 1937 is that of the Prescot and District Gas Company, which announces a gain of 12%, as compared with the preceding year. In actual figures, the gas sold in 1937 was 108,000,000 cu.ft., as against

We enabled Mr. Therm's Miracle to come true!



1938 'EMPIRE' BATH WATER HEATER

A constant hot water supply to every tap

A century of manufacturing experience enables us to produce a range of gas heaters, SINGLE and MULTI-POINT, to cover all hot water requirements at the lowest price.

Before ordering elsewhere send for particulars of

EWART'S

NEW 1938 MULTI AND SINGLE POINT WATER HEATERS

These heaters give better service, easier fixing, and reduced maintenance cost, with neater and cleaner external appearance.

EWART & SON LTD.

Dept. G. 346-350 Euston Road London N.W.1

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97,000,000 cu.ft. in 1936. The Directors attribute the growing demands for gas in the district to the new housing estates and the extended use of gas appliances on a considerable scale. A benzole plant installed during the year is working efficiently, and, the Directors say, should prove a valuable adjunct to the Company's resources. The dividend on the consolidated ordinary shares is at the rate of 5% per annum, and the payment of this, and the dividends on the preference shares, will leave a balance to the credit of Revenue Account of £3,817. The capital expenditure was increased by £6,916 during the year, bringing the debit balance on Capital Account to £11,612. Prepayment fittings, &c., and apparatus out at rent and on hire-purchase, figure in the balance-sheet at £10,599.

Solihull.

The Solihull Gas Company, whose area of supply is in the Birmingham district, report for the year 1937 an increase in gas sales of no less than 13·2%, as compared with those of the preceding year. The actual figure was 225,566,400 cu.ft., or 26,415,400 cu.ft. in excess of 1936. The district is developing rapidly, and during the year nearly 13 miles of new mains were laid, and 696 additional consumers were added. New plant has also been installed upon the works, and altogether there was a net increase during the year in the capital expended of £36,163, which leaves a debit balance on Capital Account of £4,287. The Directors announce that, "notwithstanding the increase in wages and coal prices, they have not found it necessary to raise the price of gas, owing to the economical working of the new vertical installation." The dividend upon the consolidated shares is at the rate of 5% per annum, and the Directors recommend the transfers to Renewal Fund Account and the Special Purposes Fund of the respective sums of £1,200 and £2,400. Following the capital expenditure incurred during the last two years, a considerable amount of demolition and obsolescence of plant and buildings has arisen in the year under review, towards which the Board have applied £5,000 of the Renewal Fund Account, and it is intended to exercise the powers relative to the Special Purposes Fund in this connexion, in view of the substantial amount involved.

Stamford.

Mr. Edward Dalton presided at the annual meeting of the stockholders of Stamford and St. Martin's Gas Light and Coke Company. The balance-sheet showed a record year's working under the direction of the Engineer, Secretary, and Manager, Mr. Bernard Clarke. New consumers numbered 160, and there were 209 additional rented cookers, which, together with over 600 new appliances sold, has contributed to an increase of 7·4% in the sales of gas. The report was adopted, and it was stated that the works plant had been further improved. A final dividend of 7% (actual), less tax, was declared.

Thirsk.

The Thirsk Gas Company has decided to pay a dividend on the half-year of 2½%, making, with the interim dividend, 5% for the year. The balance to be carried forward is £4 8s. 9d., and £200 is to be written off the debenture supsense account and £100 off meters and cookers.

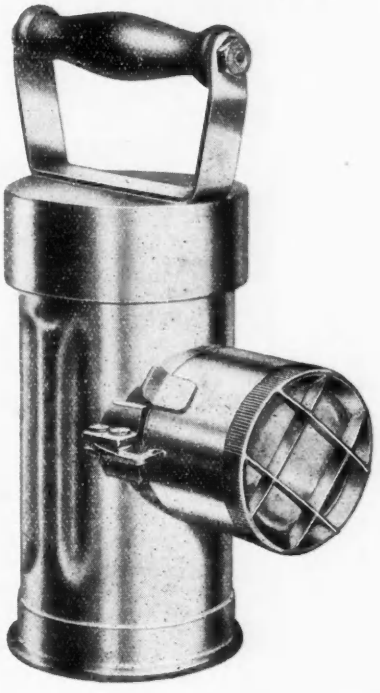
Torquay and Paignton.

In their report for the year 1937 the Directors of the Torquay and Paignton Gas Company state that the sales of gas continue to develop in a very gratifying manner, and an increase of 21,059,400 cu.ft. has been achieved. The erection of a new holder at the Barton Works has been completed. It will shortly be brought into commission, and will be of the greatest service in enabling the Company adequately to cater for the increasing demand from the Babbacombe and St. Marychurch areas. A further extension of activities is foreshadowed by a Draft Order which has been lodged with the Board of Trade. The primary object of this is the acquisition of the undertaking of the Totnes and Bridgetown Gas Light and Coke Company, Ltd. It is a pleasure to note that Mr. R. C. Taylor, Engineer and General Manager of the Company, has been appointed (subject to confirmation by the proprietors) to fill a vacancy on the Board of Directors. The sale of gas for the year was 3,358,202 therms. On Revenue Account the balance carried to profit and loss is £18,704, as compared with £17,552, for 1936. During the past year the addition made to capital expenditure was £26,632, divided almost equally between the two items of land, buildings, and machinery and new and additional mains and services. On Dec. 31 there was a balance at credit of Capital Account of £38,683. In the balance-sheet there appears a bank overdraft of £44,161; and, on the other side, under Residuals and Fittings Accounts, amounts due to the Company (including balanee outstanding on hire-purchase) figure at £74,128.

NIFE

SAFETY LAMP

type NG7.



THE ONLY LAMP

Carrying full official approval for use in Towns Gas, Hydrogen, Petroleum and other Highly Inflammable atmospheres.

Fitted with NIFE Steel Plate Accumulator as standardised in Admiralty handlamps and thousands of Miners' Lamps throughout the World.

Birmingham Gas Department alone have nearly 100 of these lamps in use.

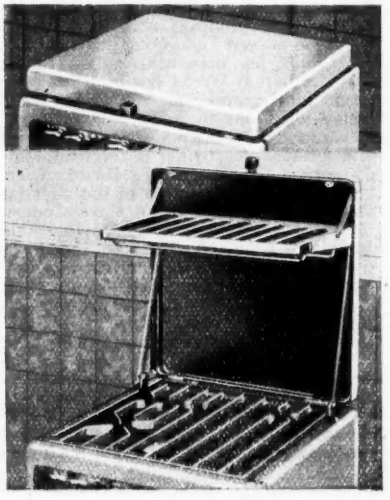
Write for publication No. 1337.

TRIALS GLADLY ARRANGED.

BATTERIES LIMITED

HUNT END WORKS REDDITCH

IN one movement the closed top of the "37" FLAVEL Kitchen Grand is converted into a splash back with a pressed steel plate rack in position, and reveals the high speed reversible Grill with rustless fret, and three Boiling Burners



Markets and Manufactures

Current Sales of Gas Products

The London Market

April 4.

To-day's prices of Tar Products in the London market are as follows:

Pitch, nominal at 35s. per ton f.o.b.
Creosote, 5¾d.
Refined tar, 3¾d.
Pure toluole, 2s. 1d. to 2s. 2d.
Pure benzole, 1s. 8d.
95/160 solvent naphtha, 1s. 7d.
90/160 pyridine, 10s. to 11s.
All per gallon naked at makers' works.

The Provinces

April 4.

Crude Gas-Works Tar, 20s. to 25s.

To avoid misunderstanding, it is necessary to state that the above price is not claimed to represent a market value. It is a price worked out from week to week upon a system which has been used for many years as a basis for the fixing of certain contracts for crude tar of varying qualities in different areas.

The average prices of gas-works products during the week were: Pitch—East Coast, 33s. to 34s. f.o.b. West Coast—Manchester, Liverpool, Clyde, 33s. to 34s.* Toluole, naked, North, 1s. 7½d. to 1s. 9d. Coal tar, crude naphtha, in bulk, North, 7½d. to 8¼d. Solvent naphtha, naked, North, 1s. 4¼d. to 1s. 5d. Heavy naphtha, North, 1s. 3d. to 1s. 3½d. Creosote, *ex* works, in bulk, North, liquid and salty, 4⅞d. to 5⅛d.; low gravity, 4¼d. to 4⅜d. Heavy oils, in bulk, North, 5d. to 5¼d. Carbolic acid 60's, 3s. to 3s. 3d. Naphthalene, £13 10s. to £16. Salts, 80s. to 85s., bags included. Anthracene, "A" quality, 4½d. to 4⅝d. per minimum 40% purely nominal; "B" quality unsalable.

* All prices for pitch are now quoted on the basis of f.o.b. In order to arrive at the f.a.s. value at any port it will be necessary to deduct the loading costs and the tolls whatever they may be.

Scotland

GLASGOW, *April* 1.

There is little or no change to report in market conditions, which remain extremely quiet.

Crude gas-works tar.—Actual value is 37s. to 38s. per ton *ex* works in bulk.

Pitch is easy at 26s. to 27s. per ton f.o.b. for export and about 25s. to 27s. per ton *ex* works in bulk for home trade.

Refined tar is now being scheduled in large quantities and home price is fixed at 3¾d. to 4d. per gallon. Export price is unchanged at 3d. to 3¼d. per gallon; both *ex* makers' works in buyers packages.

Creosote oil.—Makers are comfortably placed on contract and prices are steady as follows: Specification oil, 5d. to 5⅛d.; low gravity, 6¼d. to 6½d.; neutral oil, 5d. to 5¼d. per gallon, all *ex* works in bulk.

Cresylic acid.—There is still a definite lack of new business and prices are easy as under: Pale, 97/99%, 2s. 5d. to 2s. 7d. per gallon; dark, 97/99%, 2s. 3d. to 2s. 5d. per gallon; and pale, 99/100%, 2s. 8d. to 3s. per gallon, according to quality, all *ex* works in buyers' packages.

Crude naphtha.—Only small quantities are available and value is steady at 6d. to 6½d. per gallon *ex* works in bulk, according to quality.

Solvent naphtha.—90/160 grade is, if anything, easier at 1s. 5d. to 1s. 5½d. per gallon, but meantime 90/190 heavy naphtha is unchanged at 1s. 1d. to 1s. 2d. per gallon.

Motor benzole is valued at 1s. 4½d. per gallon.

Pyridine.—90/160 grade is now at 11s. 9d. to 12s. 3d. per gallon and 90/140 grade 12s. 6d. to 13s. 6d. per gallon.

Benzole Prices

These are considered to be the market prices for benzole at the present time:

	s. d.	s. d.	
Crude benzole..	0 9	to 0 9½	per gall. at works
Motor „ ..	1 2½	„ 1 3	„ „ „
90% „ ..	1 3½	„ 1 4	„ „ „
Pure „ ..	1 7½	„ 1 8	„ „ „

Contracts Advertised To-Day

Crude Benzole (Purchase).
Wallasey Gas Department. [p. 70.]

Gas Oil.
Sidmouth Gas Department. [p. 70.]

East Surrey

The sum of £37,500 4½% Redeemable Preference Stock, offered by tender by the East Surrey Gas Company, was allotted on March 31 at prices ranging from £112 to £105 per £100 stock, the average amount realized being £105 5s. 6d.

Overseas Opportunities

Single-Lift Gasholder.

H.M. Trade Commissioner at Singapore reports that the Singapore Municipality, Gas Department, is calling for tenders, to be presented in Singapore or London by May 9, 1938, for the supply of one single-lift gasholder. (Ref. T.Y. 18865/38.)

Oxygen Gas Cylinders, Rubber Tubing, &c.

The Commercial Counsellor to H.M. Embassy in Egypt reports that the Egyptian Ministry of Public Health is calling for tenders for the supply and delivery of various goods required during the period, May 1, 1938, to April 30, 1939, including the following: Oxygen gas cylinders; glass jars; india-rubber tubing; filtering paper.

Tenders should be addressed to the Director of Stores, Department of Public Health, Cairo, Egypt, by whom they will be received up to 10 a.m. on April 11, 1938. Offers are to be accompanied by samples.

Copies of the relevant tender documents may be purchased from the office of the Chief Inspecting Engineer, Egyptian Government, 41, Tothill Street, S.W.1. (Ref. T. 19154/38.)

PROTECT WITH

METROTECT

a bituminous paint producing a pleasant satin black finish with highly waterproof and anti-corrosive properties.

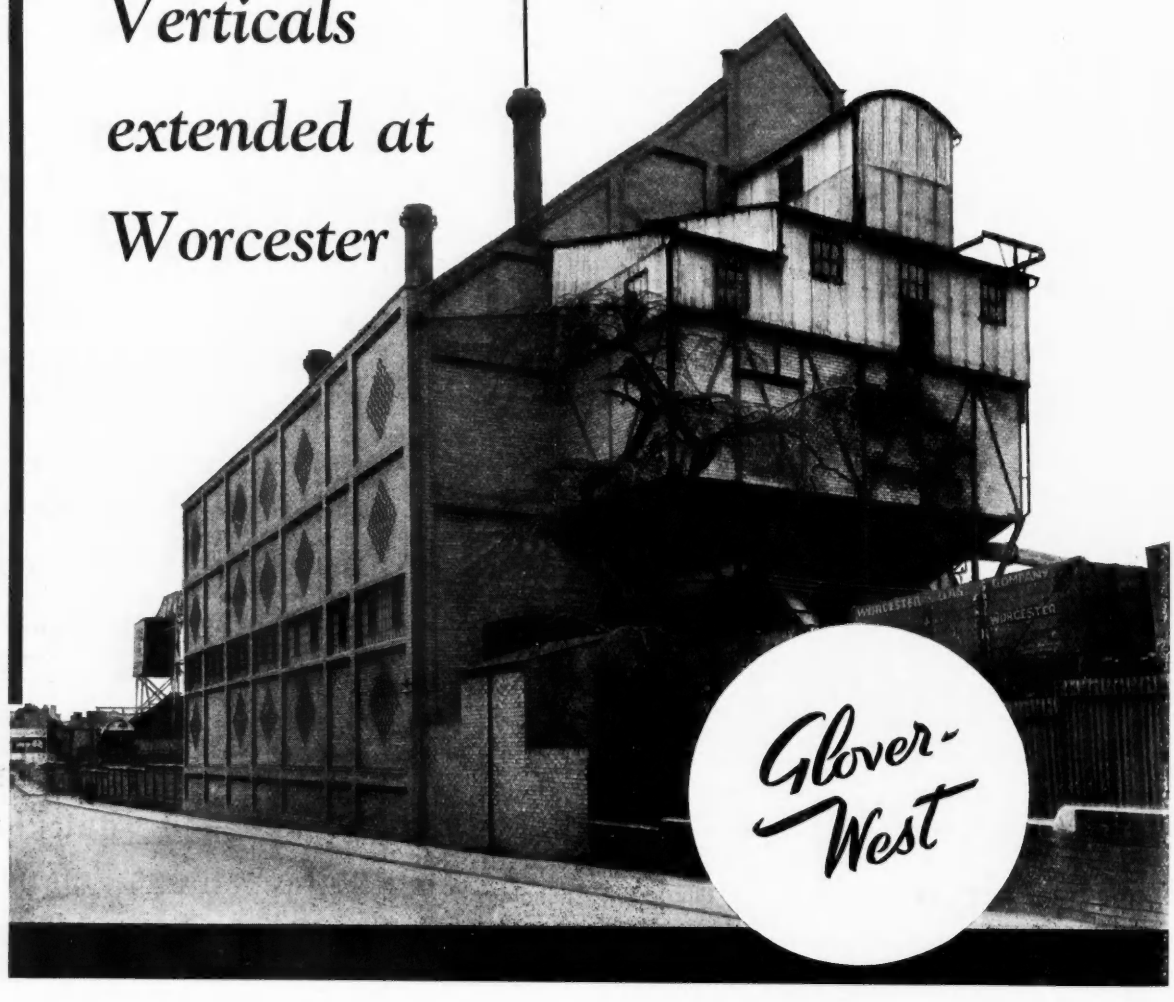
Protects steel-work which is continuously or periodically immersed in water. Does not become brittle on prolonged atmospheric exposure. METROTECT flows freely under the brush and can be applied quickly and without effort even in cold weather.

Prices and further particulars from—

SOUTH METROPOLITAN GAS CO.

PRODUCTS DEPARTMENT,
REGIS HOUSE,
KING WILLIAM STREET,
E.C.4.

Glover-West Verticals extended at Worcester



The illustration shows the Glover-West vertical retort house at the works of the Worcester New Gaslight Company with the extension recently added. The original plant of 12 retorts was put to work in 1934. Its capacity is considerably more than doubled by the new bench of 16 retorts with waste-heat recovery equipment and pressure producers.

CONTINUOUS VERTICAL RETORTS

418 plants built or ordered in 24 countries

WEST'S GAS IMPROVEMENT CO. LTD.,

MANCHESTER: Albion Ironworks, Miles Platting ■ LONDON: Columbia House, Aldwych, W.C.2

GAS STOCKS AND SHARES

Business on the Stock Exchange continued very quiet last week until Friday, when the surplus shown by the Revenue Returns, coupled with a somewhat calmer outlook on the foreign political situation, helped to stimulate more interest in markets. British Funds on the whole more than maintained their previous gains and finished fractionally higher, but home rails, though rallying towards the close, failed to hold the levels reached a week ago. Some recovery also took place among leading Industrials, though the movement came too late for prices to recover wholly the week's losses. A feature was the low levels to which silver, rubber, and tin have fallen, and share values were adversely affected in consequence. With a three-week account opening this week, to be followed by the Budget, it is not anticipated that any very marked revival of activity will be seen.

Gas stocks and shares were comparatively well supported, though prices show few, if any, signs of recovery. Gas Light units dropped again, losing 6d. to 21s. 9d., and Imperial Continental fell a further 2 points at 118½, the lowest price reached since the capital was doubled in 1932. Several parcels of this stock are on offer at 122, yielding £8 4s.%, and a purchase should prove profitable. On the Provincial Exchanges Newcastle Units followed the lead of Gas Light and dropped to 21s. 6d., or 6d. lower on the week. Bristol, however, recovered a point. Nominal quotations in the Supplementary List remained unchanged.

The Gas market was quite busy with new issues during the week. The Directors of the Tottenham and District Gas Company have disposed of £98,000 3¾% redeemable debenture stock 1963, at 100¾, through Messrs. Lawrence, Keen, & Gardner, and the Directors of the Eastbourne Gas Company have issued to Messrs. Seymour, Pierce & Co. £29,850 of similar class stock redeemable 1963-68, at 100½ net.

Another, and larger, issue is that by the Commercial Gas Company, which is offering for sale by tender £140,000 4% redeemable preference stock, 1960-63, at a minimum price of par. The Company has no preference capital issued at the present time, and the dividend on the new stock ranks prior to over 1¾ millions of ordinary stock. The balance available last year covered the dividend required on the new stock more than fourteen times. The proceeds will be utilized for repayment of temporary loans, to provide funds for development purposes, and to finance the Company's increasing sales of apparatus on hire purchase agreements. The last day for receipt of tenders is Wednesday, April 13, at 12 o'clock noon.

Official Quotations on the London Stock Exchange

Issue. £	When ex-Dividend.	Dividends. Prev. Hf. Yr. % p.a.	Dividends. Last Hf. Yr. % p.a.	NAME.	Quotations Apl. 1.	Rise or Fall on Week.
1,767,439	Mar. 7	8	8	Alliance & Dublin Ord. ...	148—153	−7
374,000	Dec. 13	4	4	Do. 4 p.c. Deb. ...	95—100	...
558,190	Nov. 15	5	5	Asscd. Gas & Water U'd'ts Ord.	18/6—20/6	...
500,000	,,	4½	4½	Do. 4½ p.c. Red. Cum. Pref.	19/—21/-	...
216,041	,,	—	§-/4	Do. 4 p.c. Red. Cum. Pref.	19/—20/-	...
278,590	,,	§-/2⅛	4	Do. 4 p.c. Irred. Cum. Pref.	17/—19/-	...
500,000	Mar. 7	3½	3½	Do. 3½ p.c. Red. Deb. ...	94—99	...
558,890	Feb. 21	7	7	Barnet Ord. 7 p.c.	158—163	...
300,000	Oct. 4	1/9⅔	1/4⅓	Bombay, Ltd.	26/—28/-	...
179,915	Feb. 21	9½	9½	Bournemouth sliding scale ...	197—202	...
590,407	,,	7	7	Do. 7 p.c. max. ...	156—161	...
493,960	,,	6	6	Do. 6 p.c. Pref. ...	132—137	...
50,000	Dec. 13	3	3	Do. 3 p.c. Deb. ...	78—83	...
262,025	,,	4	4	Do. 4 p.c. Deb. ...	98—103	...
335,000	,,	5	5	Do. 5 p.c. Deb. ...	115—120	...
357,900	Feb. 21	7½	7½	Brighton, &c., 6 p.c. Con. ...	145—150	...
649,955	,,	6⅔	6⅔	Do. 5 p.c. Con. ...	128—133	...
205,500	,,	6	6	Do. 6 p.c. 'B' Pref.	125—130	...
855,000	Mar. 7	7	8	British Ord.	138—143	...
100,000	Dec. 13	7	7	Do. 7 p.c. Pref.	142—147	...
350,000	,,	5½	5½	Do. 5½ p.c. 'B' Cum. Pref.	110—115	...
120,000	,,	4	4	Do. 4 p.c. Red. Deb. ...	95—100	...
450,000	,,	5	5	Do. 5 p.c. Red. Deb. ...	102—107	...
450,000	,,	3½	3½	Do. 3½ p.c. Red. Deb. ...	95—100	...
100,000	22 May'33	6	4	Cape Town, Ltd.	1⅛—2⅛	...
100,000	6 Nov.'33	4½	4½	Do. 4½ p.c. Pref. ...	1⅛—3⅛	...
150,000	Dec. 13	4½	4½	Do. 4½ p.c. Deb. ...	70—75	...
626,860	Feb. 7	6	6	Cardiff Con. Ord.	120—125	...
237,860	Dec. 13	5	5	Do. 5 p.c. Red. Deb.	106—111	...
98,936	Mar. 21	2/-	2/-	Colombo Ord....	1⅜—1⅞*	...
24,510	,,	1/4½	1/4½	Do. 7 p.c. Pref.	23/—25/-*	...
739,453	Mar. 21	-/11'48	-/11'48	Colonial Gas Assn. Ltd. Ord.	16/6—18/6*	...
296,144	,,	1/3·30	1/3·30	Do. 8 p.c. Pref.	21/6—23/6*	...
1,775,005	Feb. 7	5	5	Commercial Ord.	83—88	...
620,000	Nov. 29	3	3	Do. 3 p.c. Deb. ...	73—78	...
286,344	Feb. 7	5	5	Do. 5 p.c. Deb. ...	113—118	...
807,560	Feb. 21	7	7	Croydon sliding scale... ...	137—142	...
644,590	,,	5	5	Do max. div.	107—112	...
620,385	Dec. 13	5	5	Do. 5 p.c. Deb.	115—120	...
239,000	Feb. 7	5	5	East Hull Ord. 5 p.c....	96—101	...
185,355	Feb. 21	6	6	East Surrey Ord. 5 p.c. ...	118—123	...
176,211	Dec. 13	5	5	Do. 5 p.c. Deb. ...	112—117	...
250,000	Nov. 15	7	4	Gas Consolidation Ord. ...	19/—21/-	...
250,000	,,	4	4	Do. 4 p.c. Red. Cum. Pref.	18/6—20/6	...
19,223,324	Feb. 7	5⅜	5⅜	Gas Light & Coke Ord. ...	21/3—22/3*a*	−-/6
2,600,000	,,	3⅜	3⅜	Do. 3⅜ p.c. max. ...	82—85	...
4,477,106	,,	4	4	Do. 4 p.c. Con. Pref.	99—102	...
2,993,000	Jan. 17	...	3⅜	Do. 3⅜ p.c. Red. Pref.	100½—102½	−1
8,602,497	Nov. 29	3	3	Do. 3 p.c. Con. Deb.	78—81	...
3,642,770	,,	5	5	Do. 5 p.c. Red. Deb.	112—115	...
3,500,000	,,	4½	4½	Do. 4½ p.c. Red. Deb.	110—113	...
700,000	Mar. 7	3½	3½	Do. 3½ p.c. Red. Deb.	97—100	...
270,466	Feb. 21	6	6	Harrogate New Cons. ...	118—123	...
157,500	Mar. 21	1/2⅝	1/⅞	Hong Kong and China Ord	⅞—1*	...
213,200	Feb. 7	6	6	Hornsey Con. 3½ p.c. ...	105—115	...
5,600,000	Nov. 1	12	8	Imperial Continental Cap. ...	116—121	−2
223,130	Jan. 17	3½	3½	Do. 3½ p.c. Red. Deb. ...	88—93	...
285,242	Feb. 21	8½	8½	Lea Bridge 5 p.c. Ord. ...	167—172	...
11,751	Feb. 21	8	10	Maidstone 5 p.c. Cap.... ...	175—185	...
63,480	Dec. 13	3	3	Do. 3 p.c. Deb. ...	70—75	...
75,000	Nov. 29	†10	†10	Malta & Mediterranean ... Metropolitan (of Melbourne)	142—147	...
392,000	—	5½	5½	5½ p.c. Red. Deb.	99—102*	−1
231,977	Feb. 21	5	5	M.S. Utility 'C' Cons. ...	99—104	...
968,658	,,	4	4	Do. 4 p.c. Cons. Pref.	95—100	...
360,075	Dec. 13	4	4	M.S. Utility 4 p.c. Deb. ...	97—102	...
148,955	,,	5	5	Do. 5 p.c. Deb. ...	113—118	...
675,000	Nov. 15	†9	†6	Montevideo, Ltd.	75—80	...
250,000	Mar. 7	7½	7½	North Middlesex 6 p.c. Con.	145—150	...
396,160	Feb. 7	5	5	Northampton 5 p.c. max. ...	105—110	...
300,000	Oct. 18	†7	†9	Oriental, Ltd.	153—158	...
468,537	Dec. 13	8	8	Plymouth & Stonehouse 5 p.c.	154—159	...
621,667	Feb. 7	8½	8½	Portsmouth & Gosport Cons.	160—165	...
241,446	,,	5	5	Do. 5 p.c. max. ...	102—107	...
73,350	,,	5	5	Do. 5 p.c. Pref. ...	108—113	...
247,966	Dec. 13	4	4	Primitiva 4 p.c. Cons. Deb. ...	98—103	...
625,959	Jan. 17	4	4	Do. 4 p.c. Red. Deb. ...	95—100	...
15,000	Mar. 21	6	6	San Paulo 6 p.c. Cum. Pref. ...	8⅞—9⅛*	...
441,275	Sept. 20	1/1½	1/1½	Severn Val. Gas Cor. Ld. Ord.	21/—23/-	...
460,810	Mar. 21	-/10⅛	-/10⅝	,, ,, 4½ p.c. Cum. Pref.	19/—21/-*	...
133,201	Feb. 7	8½	5	Shrewsbury 5 p.c. Ord. ...	128—133	...
9,000	June 7	4	4	South African Ord.	3⅞—4⅛	...
1,371,752	Sept. 6	1/2⅞	1/2⅛	South East'n Gas Cn. Ld. Ord.	23/—25/-	...
871,636	Mar. 7	-/10⅛	-/10⅝	Do. 4½ p.c. Red. Cum. Pref.	20/—22/-	...
498,818	,,	4	4	Do. 4 p.c. Cum. Pref. ...	18/—20/-	...
450,000	Feb. 7	4	4	Do. 4 p.c. Deb.	98—101	...
150,000	,,	3½	3½	Do. 3½ p.c. Red. Deb. ...	95—98	...
6,709,895	Feb. 7	6	5	South Met. Ord.	104—107	...
1,135,812	,,	6	6	Do. p.c. Irred. Pf. ...	130—135	...
850,000	,,	4	4	Do. 4 p.c. Irred. Pf. ...	97—100	...
1,895,445	Dec. 13	3	3	Do. 3 p.c. Deb. ...	78—81	+1½
1,000,000	Jan. 17	5	5	Do. 5 p.c. Red. Deb....	109—112	...
1,543,795	Feb. 7	6	6	South Suburban Ord. 5 p.c. ...	118—123	...
512,825	,,	5	5	Do. 5 p.c. Pref....	110—115	...
500,000	,,	4	4	Do. 4 p.c. Pref....	95—100	...
250,000	,,	§18/9	3⅛	Do. 3⅛ p.c. Red. Pref.	98—101	...
888,587	Dec. 13	5	5	Do. 5 p.c. Deb....	115—120	...
250,000	,,	4	4	Do. 4 p.c. Deb....	97—100	...
200,000	Sept. 20	...	3⅛	Do. 3⅛ p.c. Red. Deb.	94—99	...
427,859	Nov. 1	1/2⅛	9⅛	S. Western Gas & Water Ord.	18/6—20/6	...
160,523	,,	-/10⅝	-/10⅝	Do. 4½ p.c. Red. Cum. Pf.	19/6—21/6	...
110,000	Dec. 13	4	4	Do. 4 p.c. Red. Deb. ...	97—102	...
750,541	Feb. 7	5	5½	Southampton Ord. 5 p.c. ...	109—114	...
148,836	Dec. 13	4	4	Do. 4 p.c. Deb.	96—101	...
350,000	Feb. 7	5½	5½	Swansea 5½ p.c. Red. Pref. ...	108—113	...
94,000	Jan. 3	3½	3½	Do. 3½ p.c. Red. Deb. ...	95—100	...
1,076,490	Feb. 7	6⅔	6⅔	Tottenham and District Ord.	126—131	...
409,835	,,	5½	5½	Do. 5½ p.c. Pref....	119—124	...
62,235	,,	5	5	Do. 5 p.c. Pref....	108—113	...
371,850	Dec. 13	4	4	Do. 4 p.c. Deb....	97—102	...
85,701	July 19	‡6	6	Tuscan 6 p.c. Red. Deb. ...	96—101	...
888,629	Oct. 4	6	4	U. Kingdom Gas Cor. Ord....	19/—21/-	...
937,743	Nov. 15	4½	4½	Do. 4½ p.c. 1st Cum. Pref.	20/—22/-	...
500,000	,,	...	-/1·15	Do. 4 p.c. 1st Red. Cum. Pf.	19/—21/-	...
745,263	Dec. 13	4½	4½	Do. 4½ p.c. 2nd Non-Cum.Pf.	16/6—18/6	...
1,000,000	Mar. 7	3½	3½	Do. 3½ p.c. Red. Deb. ...	96—99	...
373,939	Feb. 7	7	7	Uxbridge, &c., 5 p.c.	133—138	...
133,010	,,	5	5	Do. 5 p.c. Pref. ...	108—113	...
1,371,138	Feb. 7	7	7	Wandsworth Consolidated ...	135—140	...
2,525,768	,,	4	4	Do. 4 p.c. Pref. ...	96—101	...
1,343,964	Dec. 13	5	5	Do. 5 p.c. Deb. ...	115—120	...
383,745	,,	4	4	Do. 4 p.c. Deb. ...	98—103	...
558,342	Feb. 7	7	7	Watford and St. Albans Ord.	135—140	...
200,000	,,	5	5	Do. 5 p.c. Pref. ...	110—115	...
200,000	,,	5½	5½	Do. 5½ p.c Pref. ...	120—125	...
200,000	Nov. 29	4	4	Do. 4 p.c. Red. Deb.	97—102	...
100,000	,,	3½	3½	Do. 3½ p.c. Red. Deb.	95—100	...

a.—The quotation is per £1 of stock. * Ex. div. † Paid free of income-tax ‡ For year. § Actual.

Supplementary List and Provincial Exchanges overleaf.

STOCK AND SHARE LIST—Cont.

Supplementary List, not Officially Quoted, London

Issue. £	When ex-Dividend.	Dividends. Prev. Hf. Yr. % p.a.	Dividends. Last Hf. Yr. % p.a.	NAME.	Quotations Apl. 1.	Rise or Fall on Week.
202,152	Mar. 21	5	5	Ascot Ord.	103—108*	...
128,182	Dec. 13	5	5	Do. 5 p.c. Pref.	108—113	...
31,035	Mar. 21	...	-/4½	Associated Utilities 4 p.c. Pref.	16/—18/-*	...
100,000	Dec. 13	...	3½	Do. 3½ p.c. Red. Deb....	95—100	...
17,000	Feb. 21	8	8	Bognor Orig. Ord. 'A' ...	155—165	...
62,210	,,	8	8	Do. New Addl. 'A' ...	155—165	...
87,160	,,	7	7	Do. New 7 p.c. max. ...	152—157	...
37,440	Feb. 7	10	10	Cam. Univ. & Town10 p.c. max.	190—200	...
125,970	,,	7	7	Do. 7 p.c. max.	135—140	...
39,025	,,	5	5	Do. 5 p.c. max.	97—102	...
96,410	Feb. 7	4½	4½	Cardiff 4½ p.c. Pref.	95—100	...
150,000	Feb. 21	4	4	Croydon 4 p.c. Pref.	97—101	...
130,000	Dec. 13	4	4	Do. 4 p.c. Deb.	97—102	...
65,000	Mar. 7	7½	8½	Eastbourne 'A' 5 p.c. ...	155—160	...
198,000	,,	6	7	Do. 'B' 3½ p.c.	126—131	...
112,312	,,	5	5	Do. 5 p.c. Pref.	107—112	...
130,000	Dec. 13	5	5	Do. 5 p.c. Deb.	113—118	...
24,000	Feb. 21	8½	8½	Great Yarmouth 8½ p.c. max.	43—48	...
59,400	,,	7½	7½	Do. 7½ p.c. max.	33—38	...
51,160	Dec. 13	5½	5½	Do. 5½ p.c. Deb.	120—125	...
152,600	Feb. 21	8	9	Guildford Cons.	167—172	...
54,055	,,	5	5	Do. 5 p.c. Pref.	108—113	...
68,250	Dec. 13	5	5	Do. 5 p.c. Deb.	112—117	...
156,600	Feb. 21	7½	7½	Hampton Court Cons. ...	142—152	...
80,000	Feb. 21	4	4	Lea Bridge 4 p.c. Pref ...	94—99	...
60,000	,,	6	6	Do. 6 p.c. Pref. ...	123—128	...
94,876	Dec. 13	4	4	Do. 4 p.c. Deb. ...	97—100	...
73,620	Mar. 7	8¾	8¾	Luton Cons. 'A'	160—165	...
107,960	Mar. 21	4	5½	Mid Kent Ord.	8¾—9¼*	...
230,940	Feb. 7	10	10	Oxford & District Ord. ...	202—207	...
47,112	,,	5	5	Do. 5 p.c. Pref.	10t—111	...
50,000	,,	6	6	Do. 6 p.c. Red. Pref. ...	108—113	...
126,193	Nov. 15	7½	7½	Peterborough Ord.	158—163	...
64,990	Mar. 7	6½	7½	Redditch Ord....	122—132	...
166,850	Feb. 7	8	8	Romford Ord....	148—153	...
60,000	,,	4	4	Do. 4 p.c. Pref.	97—100	...
44,000	Mar. 21	5	5	Do. 5 p.c. Deb.	111—116*	...
25,570	Feb. 7	5½	5½	Rugby 5½ p.c. Pref.	123—128	...
25,000	,,	6	6	Do. 6 p.c. Red. Pref. ...	103—108	...
42,750	Dec. 13	5½	5½	Do. 5½ p.c. Deb.	120—125	...
10,950	Feb. 21	8	8	Ryde Ord.	140—150	...
270,086	Mar. 21	7	7	Slough Ord.	133—138*	...
21,000	Dec. 13	5	5	Do. 5 p.c. Deb.	110—115	...
28,872	Nov. 1	5½	5½	S. Midland Gas Cpn. Ltd. Ord.	19/—21/-	...
28,866	Mar. 7	4½	4½	Do. 4½ p.c. Red. Cum. Pref.	18/6—20/6	...
137,730	Feb. 21	7	7	Southgate & Dist. 7 p.c. max.	135—140	...
62,500	,,	5	5	Do. 5 p.c. Pref.	110—115	...
117,228	Feb. 7	5	7	Swindon Cons.	104—109	...
60,425	Dec. 13	5	5	Do. 5 p.c. Deb.	110—115	...
64,380	Dec. 13	5	5	Torquay and Paignton 5 p.c. Pf.	108—113	...
33,858	Nov. 15	...	-/2·70b	United Kingdom Gas Corpn. 4½ p.c. 1st Cum. Pref. ...	18/—20/-	...
130,000	Feb. 7	5	8	Wakefield Ord.	118—123	...
81,650	,,	5	5	Do. 5 p.c. max.	101—106	...
82,000	Feb. 21	6	6	Weymouth Ord.	105—110	...
98,384	Feb. 7	6	6	Wolverhampton 6 p.c. Pref....	118—123	...
160,000	Dec. 13	5½	5½	Do. 5½ p.c. Rd. Db.	107—112	...
90,000	Dec. 13	5	5	York 5 p.c. Red. Deb.... ...	104—109	...
133,640	Feb. 21	6½	6½	Yorktown (Cam.) 5 p.c. Cons.	126—131	...
120,000	,,	5	5	Do. 5 p.c. Pref.	106—111	...
35,000	Dec. 13	5½	5½	Do. 5½ p.c. Deb.	121—126	...

BRISTOL EXCHANGE

Issue.	When ex-Dividend.	Dividends. Prev. Hf. Yr. % p.a.	Dividends. Last Hf. Yr. % p.a.	NAME.	Quotations, Apl. 1.	Rise or Fall on Week.
347,756	Feb. 7	5	6	Bath Cons.	120—122	...
1,667,250	Feb. 7	5	5	Bristol, 5 p.c. max.	114—116	+1
120,420	Dec. 13	4	4	Do. 1st 4 p.c. Deb. ...	100—102	...
217,870	,,	4	4	Do. 2nd 4 p.c. Deb. ...	100—102	...
328,790	,,	5	5	Do. 5 p.c. Deb.	119—122	...
274,000	Feb. 21	5	5	Newport (Mon.) 5 p.c. max....	99—101	...
13,200	Mar. 21	7	8⅝	Pontyp'l Gas & W. 10 p.c. 'A'	12⅛—13⅛*	...
13,600	,,	5	6	Do. 7 p.c. 'B'	11⅞—12⅛*	...
40,000	,,	5	6	Do. 7 p.c. 'C'	11⅞—12⅛*	...
140,778	Feb. 7	5	5	Weston-super-Mare Cons. ...	110—112	...
64,338	Jan. 3	4	4	Do. 4 p.c. Deb.	94½—96½	...
33,340	,,	7½	7½	Do. 7½ p.c. Deb.	154—157	...

LIVERPOOL EXCHANGE

Issue.	When ex-Dividend.	Dividends. Prev. Hf. Yr. % p.a.	Dividends. Last Hf. Yr. % p.a.	NAME.	Quotations, Apl. 1.	Rise or Fall on Week.
157,150	Feb. 7	5	6½	Chester 5 p.c. Ord.	103½—107½	...
92,500	Dec. 13	4	4	Do. 4 p.c. Pref.	96—100	...
36,430	,,	3½	3½	Do. 3½ p.c. Deb.	88—91	...
41,890	,,	4	4	Do. 4 p.c. Red. Deb. ...	97—101	...
2,167,410	Feb. 21	6	6	Liverpool 5 p.c. Ord.... ...	123⅜—124¼	...
245,500	Dec. 13	5	5	Do. 5 p.c. Red. Pref. ...	99—104	...
306,083	Jan. 17	4	4	Do. 4 p.c. Deb. ...	100—102	...
106,280	Feb. 7	10	10	Preston 'A' 10 p.c.	202—212	...
188,219	,,	7	7	Do. 'B' 7 p.c.	144—154	...

NEWCASTLE EXCHANGE

Issue.	When ex-Dividend.	Dividends. Prev. Hf. Yr. % p.a.	Dividends. Last Hf. Yr. % p.a.	NAME.	Quotations, Apl. 1.	Rise or Fall on Week.
122,577	Feb. 21	8	8	Blyth 5 p.c. Ord.	163½—164½	...
732,000	Feb. 21	5	5	Hartlepool G. & W. Cn. & New	110—112	...
2,061,315	Feb. 7	5	5¾	Newcastle & Gateshead Con.	21/—22/-a	—/6
682,856	,,	4	4	Do. 4 p.c. Pref. ...	98—100	...
776,706	Jan. 3	3½	3½	Do. 3½ p.c. Deb. ...	91½—92½	...
277,285	Nov. 1	5	5	Do. 5 p.c. Deb. '43...	103—105	...
332,351	Feb. 7	6	6	Sunderland 6 p.c. max. ...	137—139	...

NOTTINGHAM EXCHANGE

Issue.	When ex-Dividend.	Dividends. Prev. Hf. Yr. % p.a.	Dividends. Last Hf. Yr. % p.a.	NAME.	Quotations, Apl. 1.	Rise or Fall on Week.
542,270	Feb. 21	6	9	Derby Con.	135—145	...
55,000	Dec. 13	4	4	Do. 4 p.c. Deb.	100—105	...
20,000	Dec. 13	5	5	Long Eaton 5 p.c. Pref. ...	10—12	...
80,000	,,	5	5	Do. 5 p.c. Deb. ...	105—110	...

SHEFFIELD EXCHANGE

Issue.	When ex-Dividend.	Dividends. Prev. Hf. Yr. % p.a.	Dividends. Last Hf. Yr. % p.a.	NAME.	Quotations, Apl. 1.	Rise or Fall on Week.
10,000	Feb. 21	10	10	Great Grimsby 'A' Ord. ...	210—220	...
6,500	,,	10	10	Do. 'B' Ord. ...	210—220	...
79,000	,,	10	10	Do. 'C' Ord. ...	205—210	...
1,806,339	Feb. 21	6½	6½	Sheffield Cons.	142—145	...
95,000	Jan. 3	4	4	Do. 4 p.c. Deb.	100—103	...

a The quotation is per £1 of Stock. *b* Actual. * Ex div.

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